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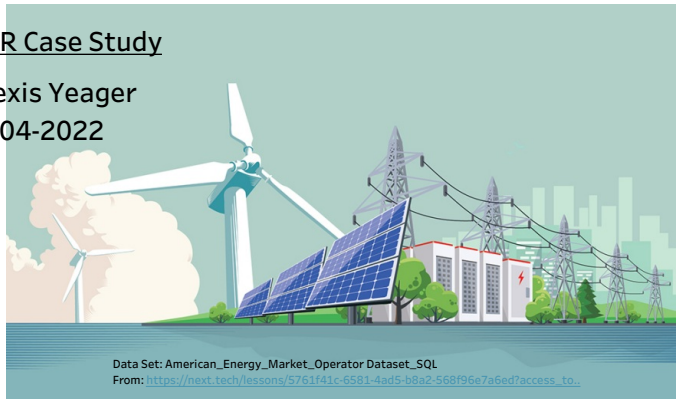
AMER Case Study

Alexis Yeager

04-2022



Data Set: American_Energy_Market_Operator Dataset_SQL
From: https://next.tech/lessons/5761f41c-6581-4ad5-b8a2-568f96e7a6ed?access_to..

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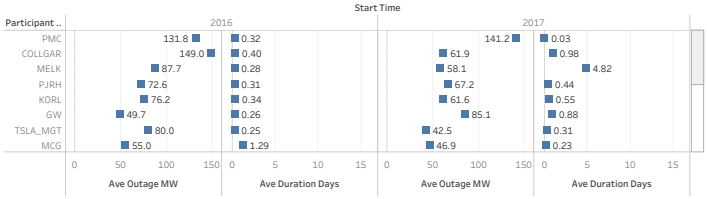
Problem Summary

Recently, the AEMR management team has been increasingly aware of a large number of energy providers that submitted outages over the 2016 and 2017 calendar years. The management team has expressed a desire to have the following two areas of concern addressed: ..

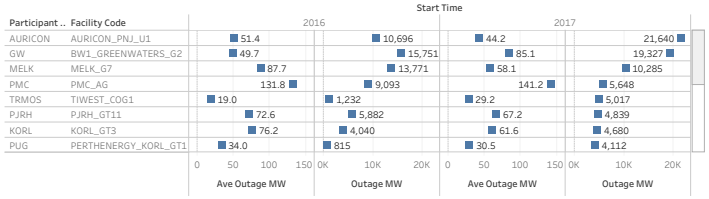
Executive Summary

Several participants are noted as problems. Three catagories of problems have been ideantified; Number of outages, length of outages, and amount of energy loss during outages. Participants to look into a..

Average Duration (Days) and Energy Lost (MW) of Approved Forced Outages



Average Energy Lost (MW) and SUM Energy Lost (MW) of Approved Forced Outages



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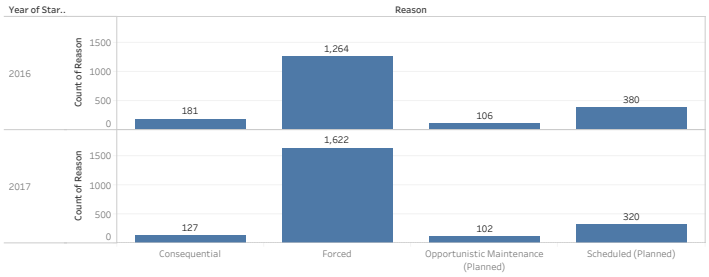
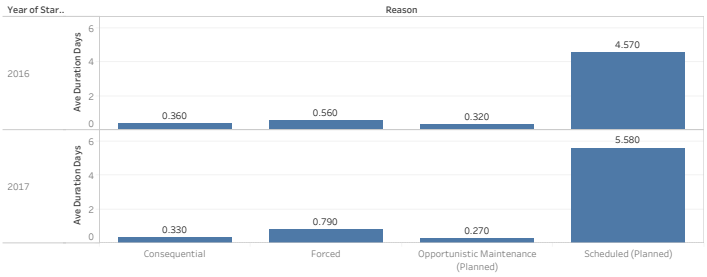
Part 1 : Energy Stability and Market Outages

The most common outages in 2016 and 2017 are Forced, at a grand total of 2,886 outages. However, Forced Outages only have the 2nd longest average outage duration time in days, behind scheduled outages.

Count of Approved Outages



Average Outage Duration (Days)



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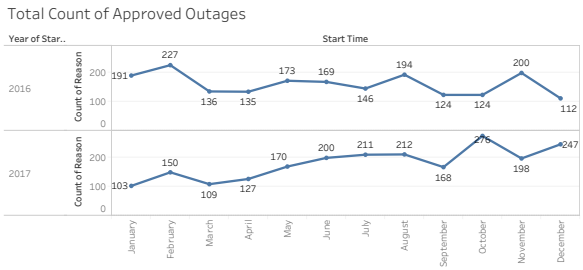
Graph 1

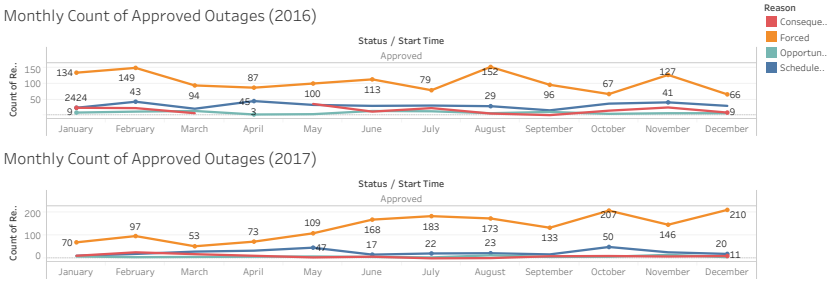
In 2016, there are a spike of outages in Feburary (227), August (194), and November (200). In 2017 the spikes of outages are in Fedurary (150), October (276), and December (247). There is a somewhat steady increase lasting 6 months between March (109) and August (212), totaling 103 outages, before dorpping in September. This is not observed in 2016.

Graph 2

Compaired to Forced outages, all other outages see somewhat steady numbers of outages in bother 2016 and 2017, the biggest spike observed belongs to Scheduled in 2017 during September (18) and October (50).

2016 Forced outages see a spike in outages during August (152) and November (127); whereas in 2017, spikes are observed in October (207) and December (210). Between March (53) and July (183), we see a steady increase of outages (total 13..





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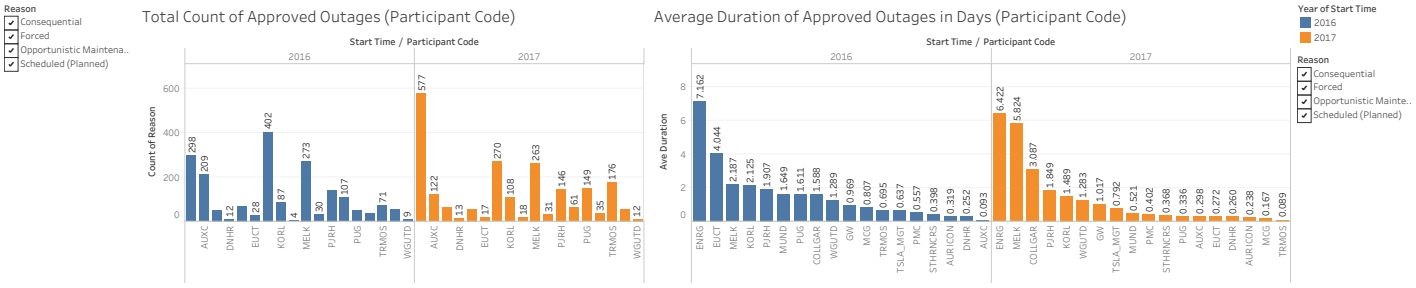
Graph 1

In 2016, the most outages of 402 belonged to GW, followed by AURICON at 298 and MELK at 273. In 2017 however, AURICON skyrockets from previous amount of 298 to 577. GW (270) and MELK (263) still follow behind, but have actually reduced their amount of averages by 3% (MELK) and 32% (GW).

Graph 2

The participant who holds the longest average outage duration in both 2016 and 2017 is ENRG (7.16 - 6.42 days). The second highest in 2016 is EUCT, but they reduce by around 4 days in 2017. The 3rd high..



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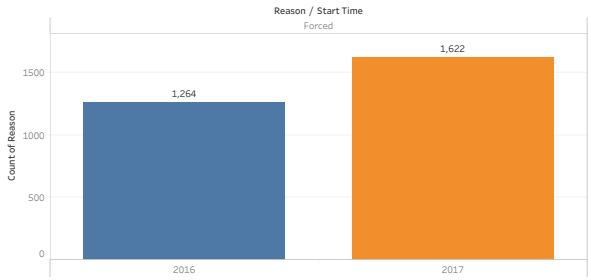
Part 2: Energy Losses and Market Reliability

Title	Executive Summary	Part 1 : Energy Stability and Market Outages	Q1 What are the most common outage types?	Q2 How frequently do outages occur?	Q3 Are there any energy providers that have more outages than their peers that may be indicative of being unreliable?	Part 2 : Energy Losses and Market Reliability	Q1 Of the outage types in 2016 and 2017, what are the respective percentages composed of Forced Outage(s)?	Q2 What was the average duration for a forced outage during both 2016 and 2017? Have we seen an increase in the average duration of forced ou..	Q3 Which energy providers tend to be the most unreliable?	Insight

The percentage of Forced outages rises from 65% in 2016 to 75% in 2017

Year of Start Time
2016
2017

Total Count of Approved Forced Outages



Approved Forced Outage Percentage

Year of Start Time	Forced Outage	Count of AEMR_OUTAGE_TABLE	% Forced Outage
2016	1,264	1,931	65
2017	1,622	2,171	75

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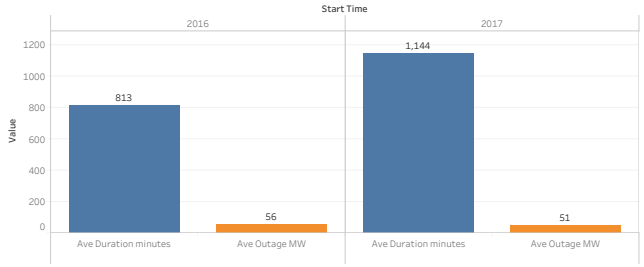
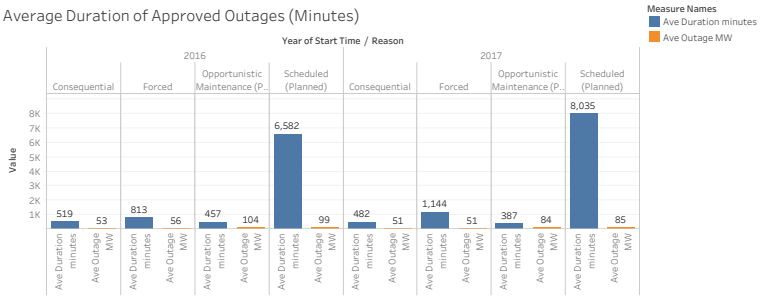
The average duration (minutes) of a forced outage has gone up between 2016 (813 minutes) and 2017 (1,144 minutes).
It is interesting to note that while Consequential and Maintenance averages have gown down, Scheduled has also gone up along with Forced.

Average Duration (Minutes) and Energy Lost (MW) of Approved Forced Outages



Average Duration of Approved Outages (Minutes)



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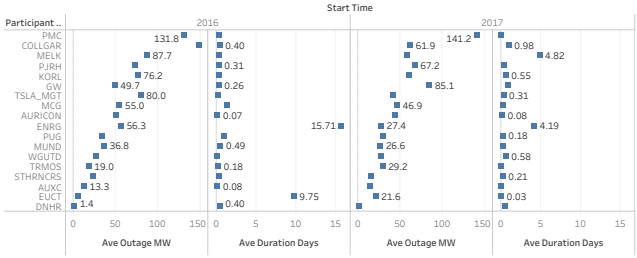
Graph 1

In 2016, COLLGAR had the highest average energy lost (149 MW). In 2017, it was PMC (141.2 MW). However, for average outage duration in days, ENRG (15.71 days) was highest in 2016, and MELK (4.82 days) was highest in 2017.

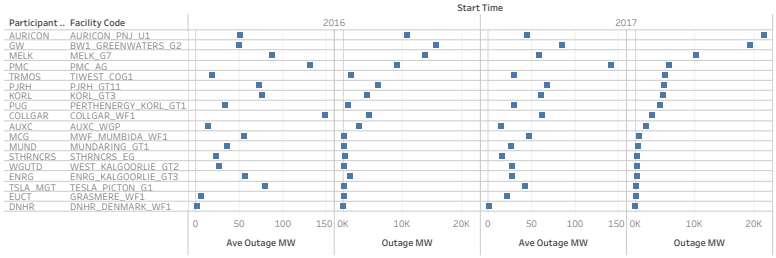
Graph 2

..

Average Duration (Days) and Energy Lost (MW) of Approved Forced Outages



Average Energy Lost (MW) and SUM Energy Lost (MW) of Approved Forced Outages



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To know who is unreliable to most depends on which information is most important.

In terms of <u>outages lasting for days</u>, the most unrealiable would be
2016
- ENRG (15.71 days)
- EUCT (9.75 days)

For <u>overall energy lost (MW)</u>, that would belong to
2016
-GW (15,751 MW)
-MELK (13,771 MW)

Average Energy Lost (MW) and SUM Energy Lost (MW) of Approved Forced Outages