



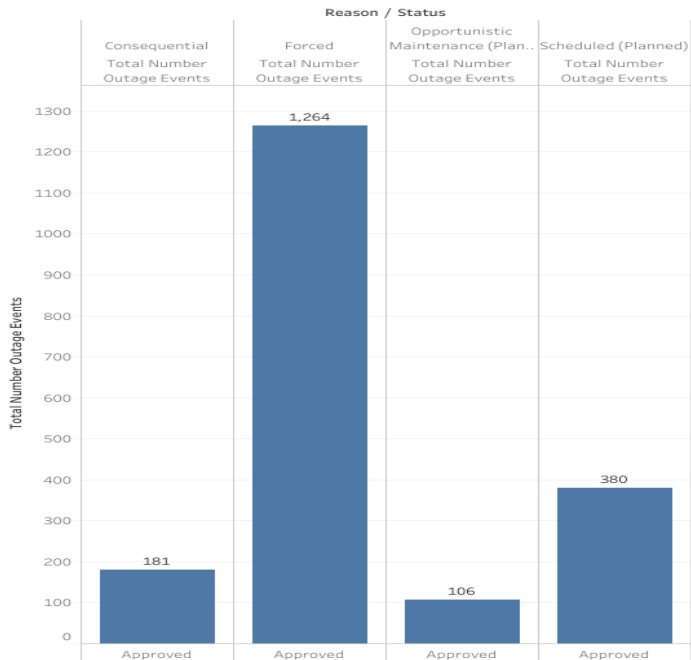
AEMR – Executive Presentation

Date: 4/13/2020

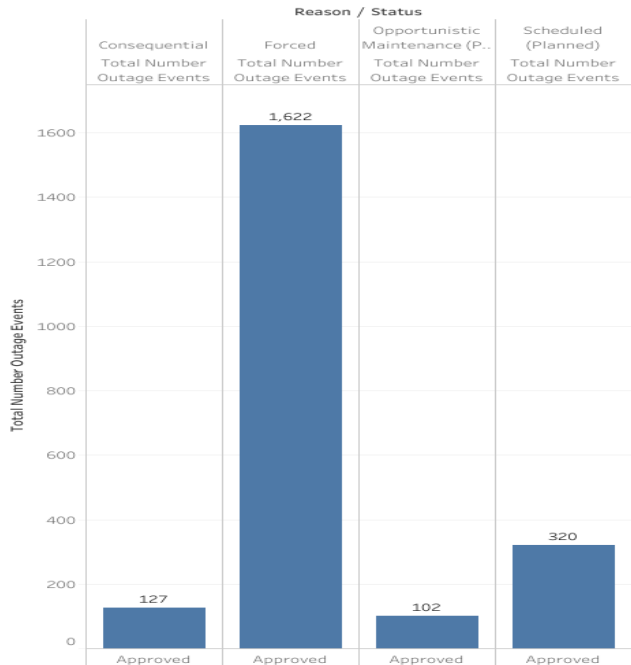
Presenter: Derek Strang

Over the 2016 and 2017 calendar years, we have seen the largest number of outage events occurring as forced, which has proven to be the most unpredictable of the outage event types, which we saw increase of 28% from 2016 to 2017. However, while forced outage events accounted for a disproportionate amount of the outage events over the last two years, it was scheduled outages for maintenance purposes that accounted for the largest outage periods, as measured in days.

Number of Approved Outages per Reason



Section 1: 1.3

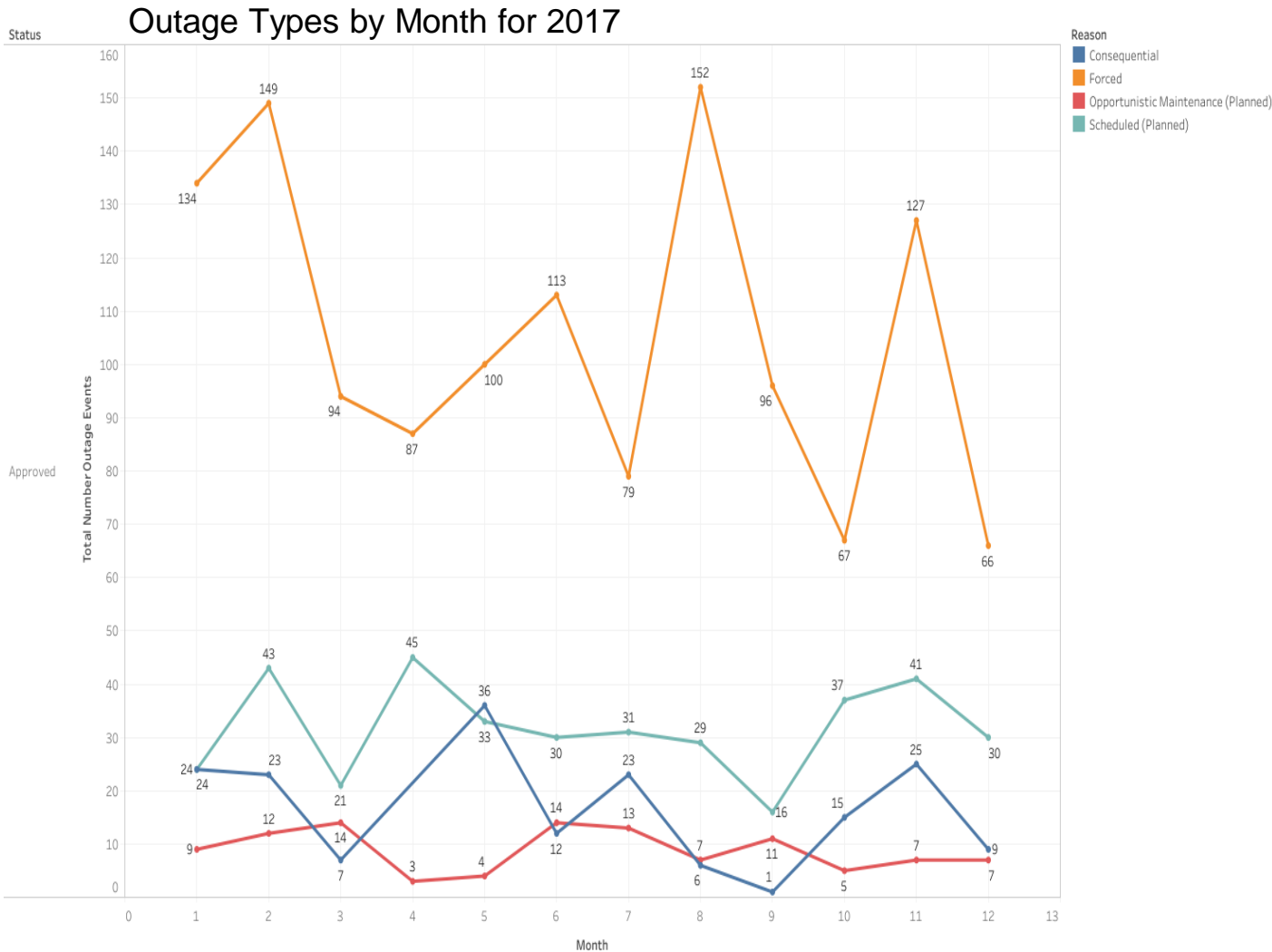


Key Insights

- To the left, we see forced outage events accounted for 1,264 outage events in 2016, followed by scheduled events at 380, consequential at 181 and opportunistic at 106.
- We see outage events distributed similarly in 2017, with Forced outages growing by 28% to 1,622, followed by scheduled at 320, consequential at 127 and forced opportunistic at 102.
- Although forced outages account for a majority of the outages that have occurred over that last two years, scheduled maintenance, as seen below, has seen an average outage duration time of over 4 days in both the 2016 and 2017 calendar year, while forced outages have not exceeded a day in either year.



Over the 2017 calendar year, we consistently saw forced outage events accounting for a majority of outage events, followed by scheduled events. While forced events remained higher for the calendar year, we did see a 50% decrease in forced outages from month 1 to month 12, while we saw a 25% increase in scheduled outages.

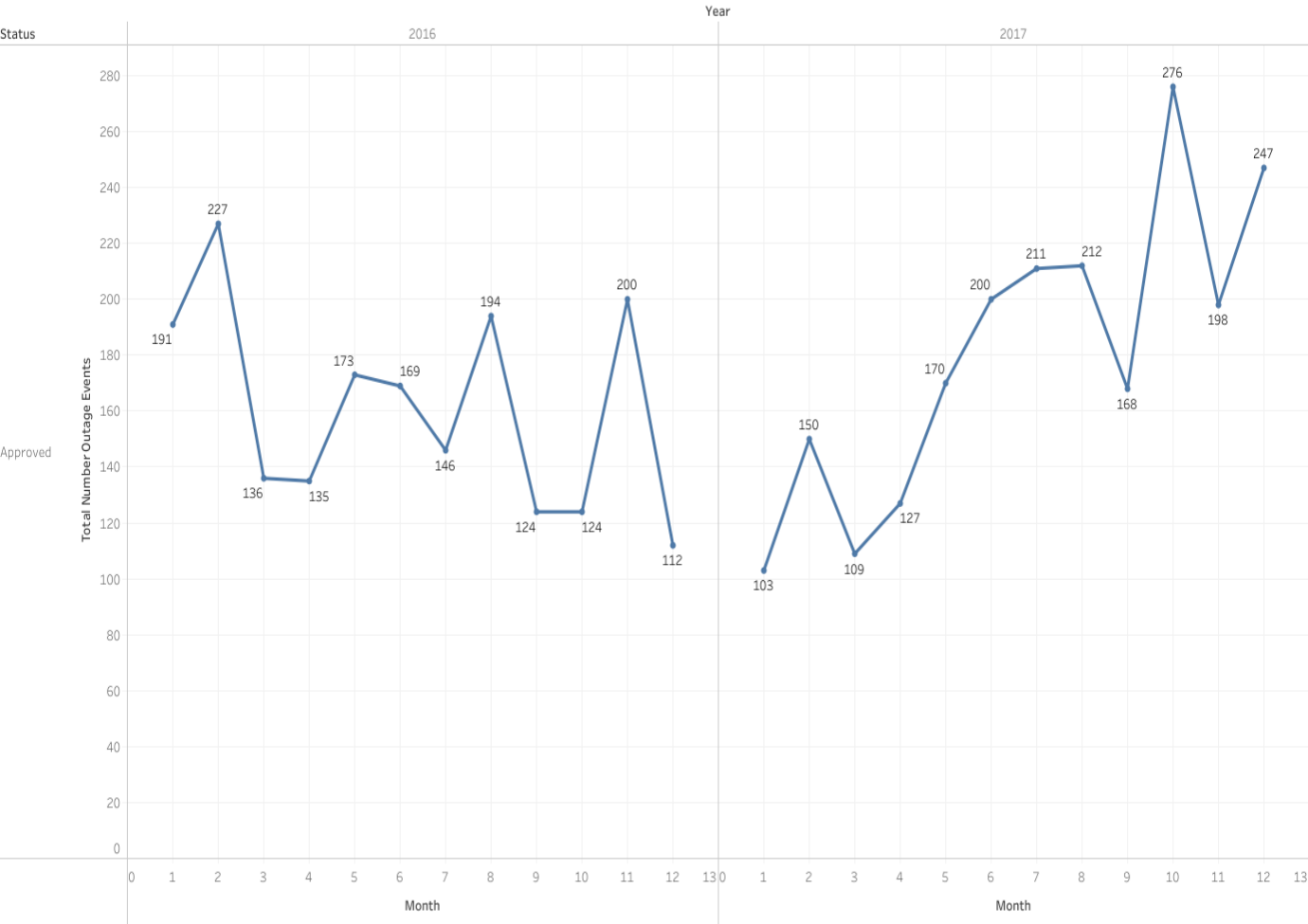


Key Insights

- In 2017, forced outage events topped all other events in all 12 months with a max number of events occurring on month 8, where we saw 152 forced outage events, a min number of events occurring on month 12 at 66 forced outage events.
- Following forced outage events, we consistently saw scheduled events accounted for the second largest amount of outage events with a max number of schedule events occurring in month 4 where we saw 45 schedule outages and a min amount occurring in month 9, where we only saw 16 scheduled outages.
- Scheduled outages were surpassed by consequential on one occasion, on month 5 where we saw 36 consequential and 33 scheduled.

A cumulative look at all approved outage types, including forced, schedule, consequential and opportunistic, illustrates a substantial year over year increase in outage events starting midway through the 2017 calendar year. Here we can see the largest amount of outage events occuing in month 10 of 2017 with 276 outage events representing 122% increase n outages year over year.

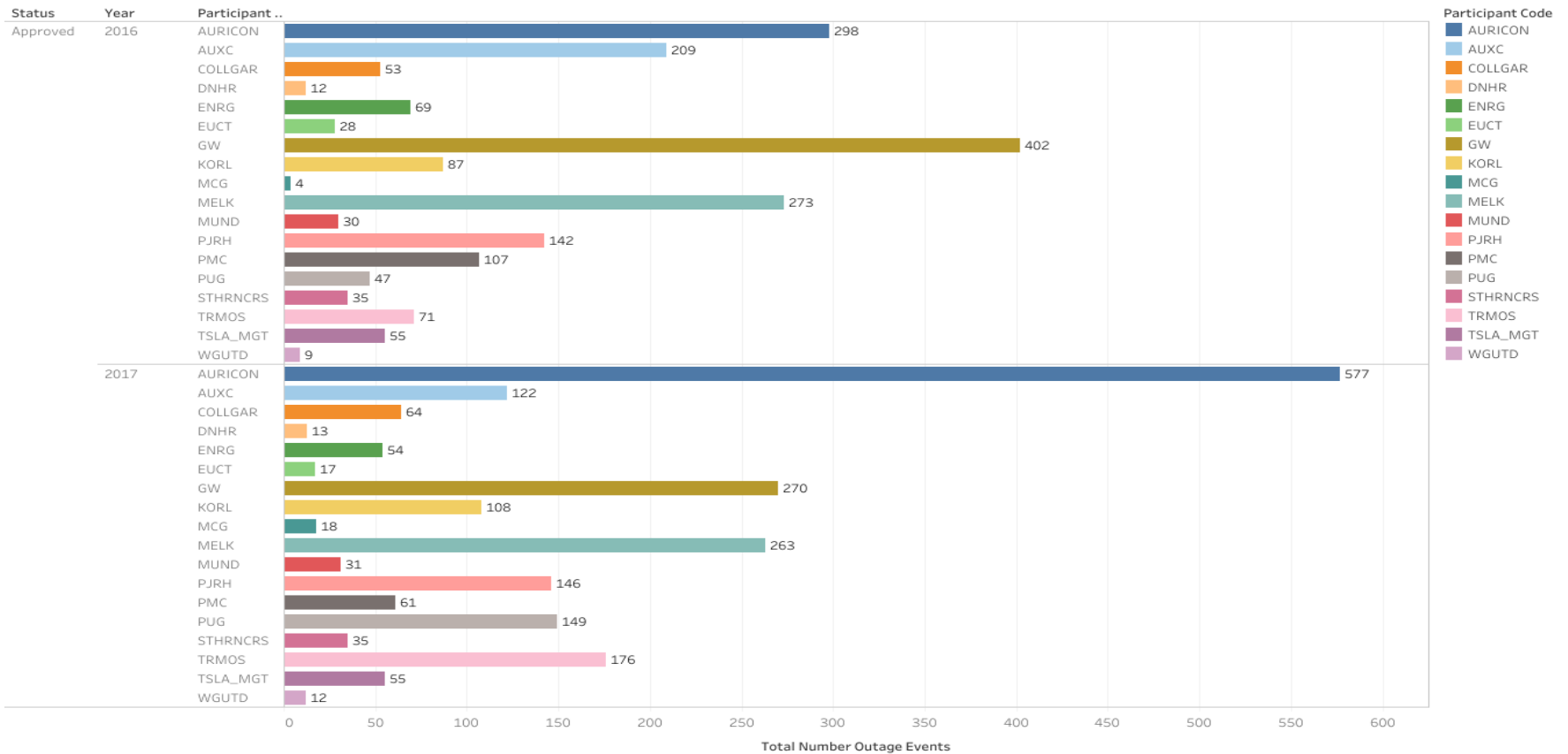
Section 1: 2.3



Key Insights

- While the first 5 months of 2016 saw a greater number of outage events from the following year, 2017 saw a greater number of outage events year over year from month 6 to 12, with only one exception, month 11 of 2016.
- From month 6 to 12, 2017 had a 18% increase in month 6, a 44% increase in month 7, a 10% increase in month 8, a 35% increase in month 9, a 122% increase in month 10, a 1% decrease in month 11 and a 120% increase in month 12.

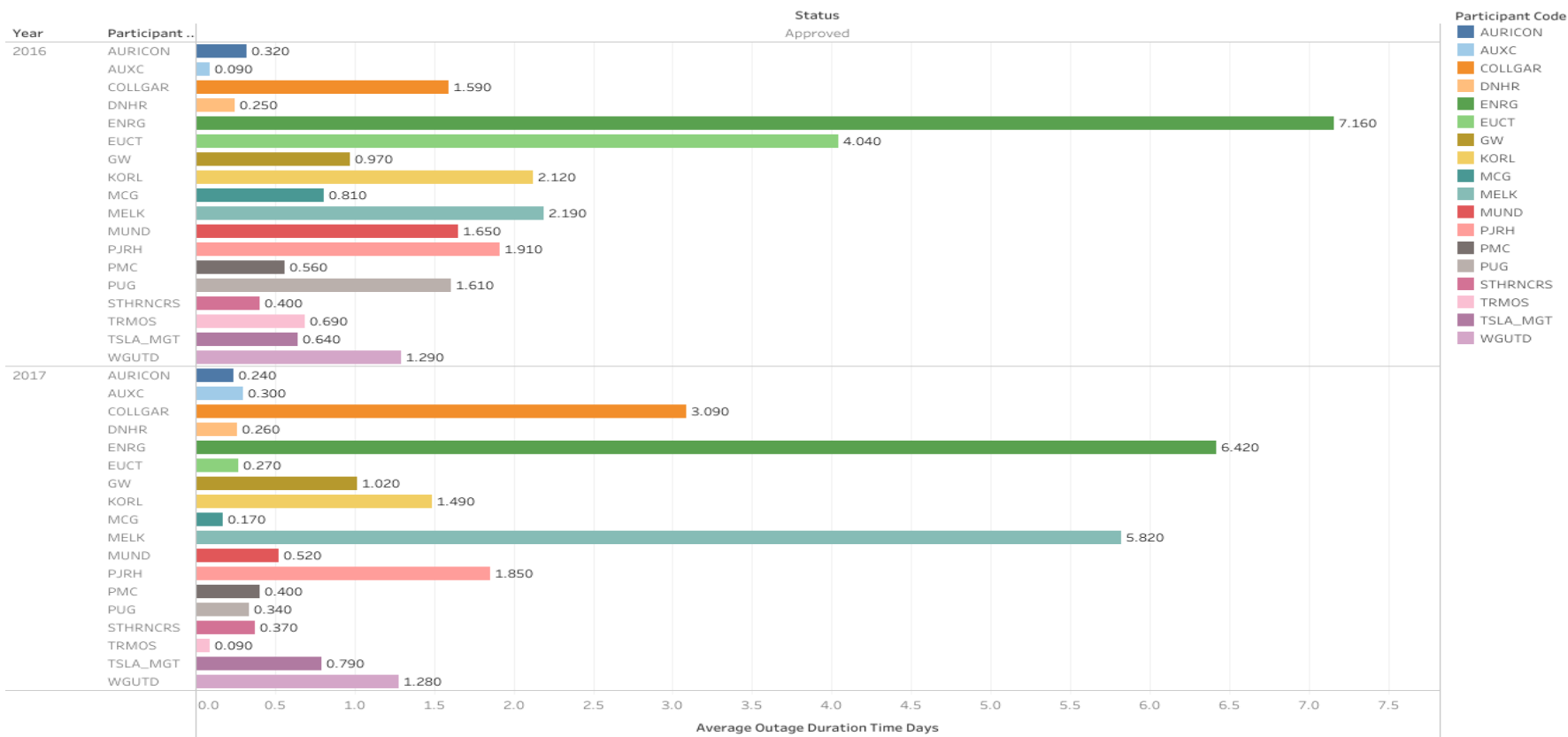
When looking at the total number of outage events for 2016 and 2017 per participating business unit, we see Auricon, GW and MELK respectively accounting for the most outages over the two year period. Conversely, we see business units such as MCG, DNHR, and WGUTD accounting for the least amount of outage events in the two year period.



Key Insights

- Of the 3 business units that are seeing the most outages, we saw a year over year growth in outage events of 93% for Auricon, a 32% decrease for GW, and a 4% decrease for MELK.
- Additionally, we saw large growth in outage events for business units PUG, which saw a 217% increase year over year, and TRMOS, which saw 148% increase over the same period.

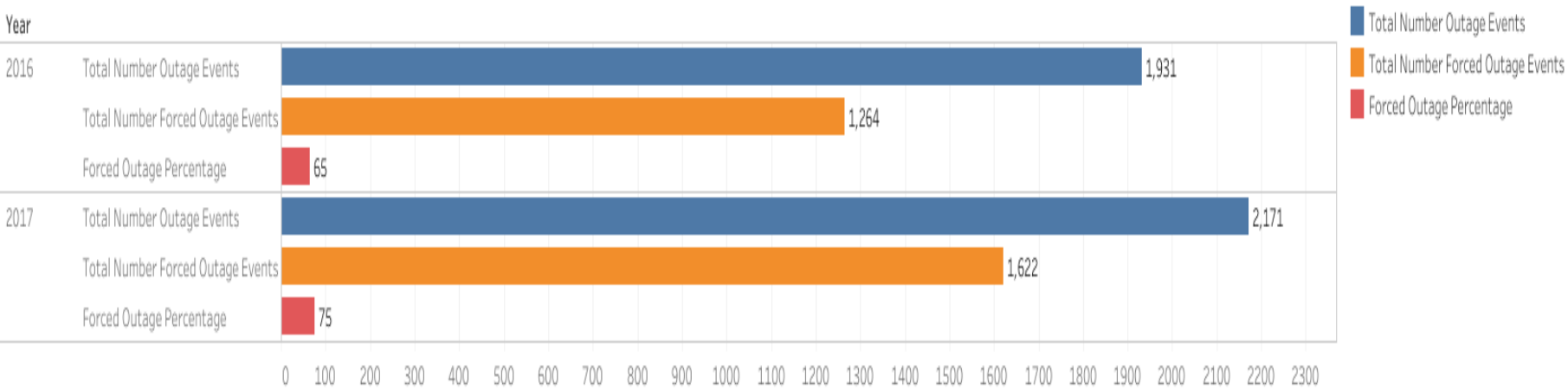
When looking at the average duration of outage periods in days for 2016 and 2017, we see that ENGR with a substantially larger amount of outage days per year equaling over 6 days in both 2016 and 2017.



Key Insights

- In 2016, ENGR cumulated 7.16 days of outages, followed by EUCT with 4.04 days, MELK with 2.19 days and KORL with 2.12 days. Conversely, AUXC had the least with .09, followed by DNHR with .25 days and AURICOR with .32 days.
- Interestingly, while Auricon had by far the most outage events, the length of their outage events were consistently amount the bottom in terms of duration.
- In 2017, ENGR remained the top business unit for cumulative days for outage periods with 6.42 days. Interestingly, we saw EUCT's outage duration in days drop from 4.04 days to .27 days, while we saw MELK drastically increase from 2.19 days to 5.82 days.

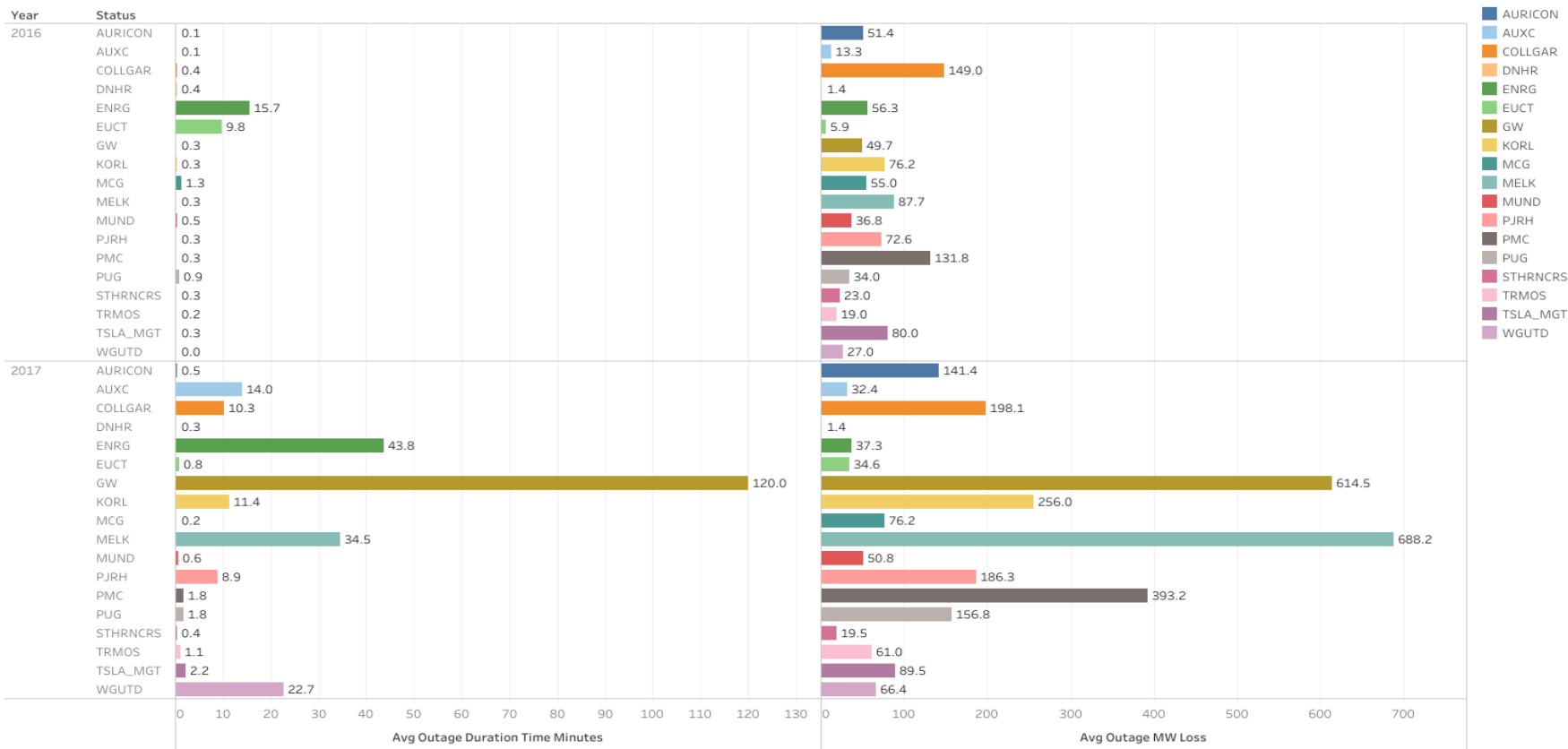
When comparing the total amount of outage events with total number of forced outage events from 2016 to 2017, we see forced outage events account for 65% and 75% of all outage events in 2016 and 2017 respectively.



Key Insights

- In 2016, we see forced outage events totaled 1,264, representing 65% percent of all 1,931 outage events that occurred over the calendar year.
- In 2017 we saw forced outage events totaled 1,622, or 75% of all 2,171 outage events that occurred during the calendar year.
- Overall, we saw an increase in total outage events year over year of 12% and a 28% increase in forced outage events over the same period.

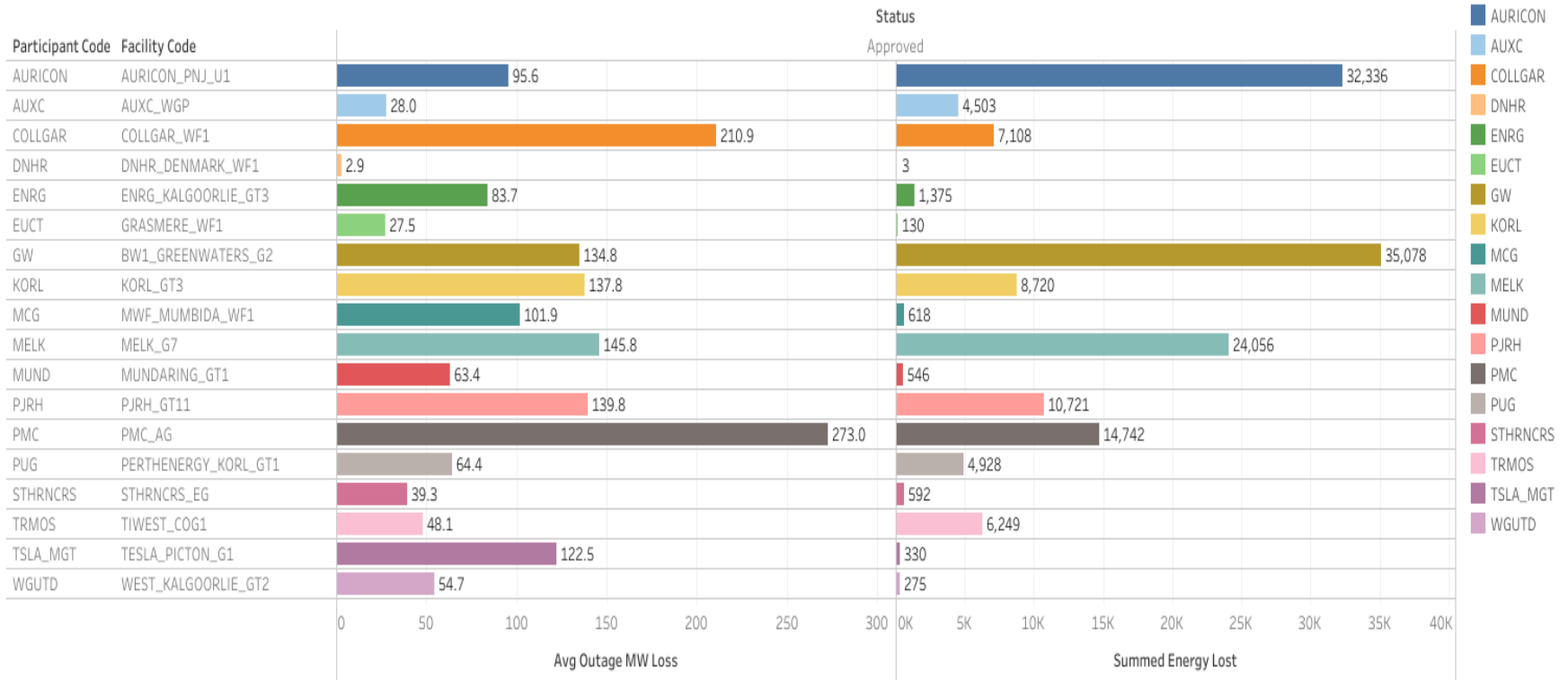
From 2016 to 2017, we saw a drastic increase in both average outage time (mins) per business unit as well as an increase in MW loss per business unit almost entirely across the board, with ENGR, GW, MELK seeing the largest increase in avg outage duration while GW, KORL, MELK and PMC showed the largest increase in avg MW loss.



Key Insights

- From 2016 to 2017, we saw the largest increase in avg outage duration time in minutes in business units ENRG, GW, MELK, and WGUTD, which saw a 180%, 399%, 114% and 227% respectively.
- From 2016 to 2017, we saw the largest increases in avg MW loss in GW, KORL, MELK and PMC, which showed increases of 1136%, 236%, 684% and 198% respectively.
- While ENGR was second in 2017 behind GW for avg outage duration time, it saw an avg outage MW loss of only 37.2, as compared to 614.5 by GW, 688.2 by MELK and 393.2 by PMC, the three leaders in terms of MW loss.

For the 2017 calendar year, we see the largest average MW loss in business units PMC, COLLGAR, and PJRH, while the largest summed energy losses occurring in GW, AURICON, MELK and PMC respectively.



Key Insights

- In 2017, the largest average outage MW loss can be seen in PMC, COLLGAR, PJRH, which had an average outage MW loss of 273, 210.9, 139.8 respectively.
- Additionally, the largest summed energy losses were seen in business units GW, AURICON, MELK, and PMC, which saw energy losses of 35,078, 32,336, 24,056, and 14,742 respectively.
- While neither GW, AURICON nor MELK were leaders in average outage MW loss, they were the top 3 in terms of summed energy loss, suggesting they more frequently experience outage events.