Overview of
GISD Utility Benchmarking & Baseline Calculations

Utility Benchmarking

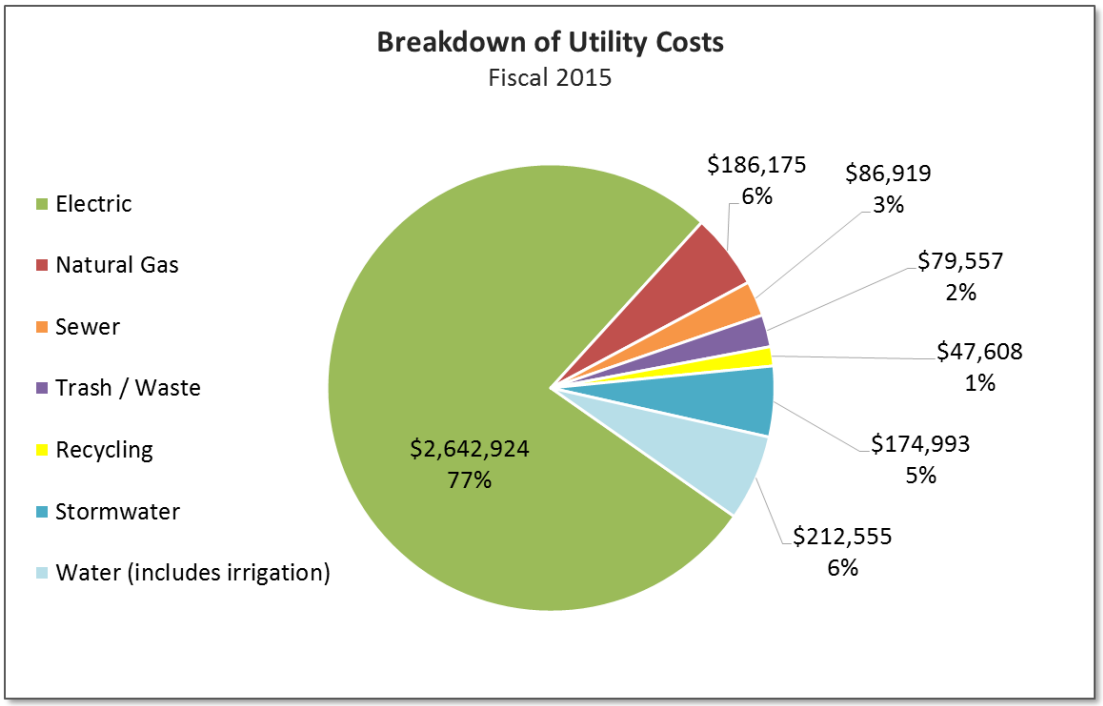
Benchmarking the utility consumption for GISD facilities establishes a baseline for comparison when analyzing current consumption data. By knowing how a facility has performed in the past, it is easier to identify anomalies (such as billing errors or equipment issues) and measure improvement efforts.

What to Benchmark: Breakdown of Annual Utility Costs

In analyzing the breakdown of annual utility costs over recent years, the following is consistent:

- **Electric costs account for approximately 75-80% of all annual utility costs.**
- **Water costs are the second leading utility expense annually.** Standard water costs associated with common use and irrigation typically account for 5-10% of annual utility costs. In addition, sewer costs include volumetric charges based on standard water consumption.

The utilities most easily influenced through conservation efforts are electric and water consumption. As these two utilities account for approximately 80-90% of all utility costs, benchmarking and reporting on these two utilities alone can greatly impact overall utility costs for GISD.



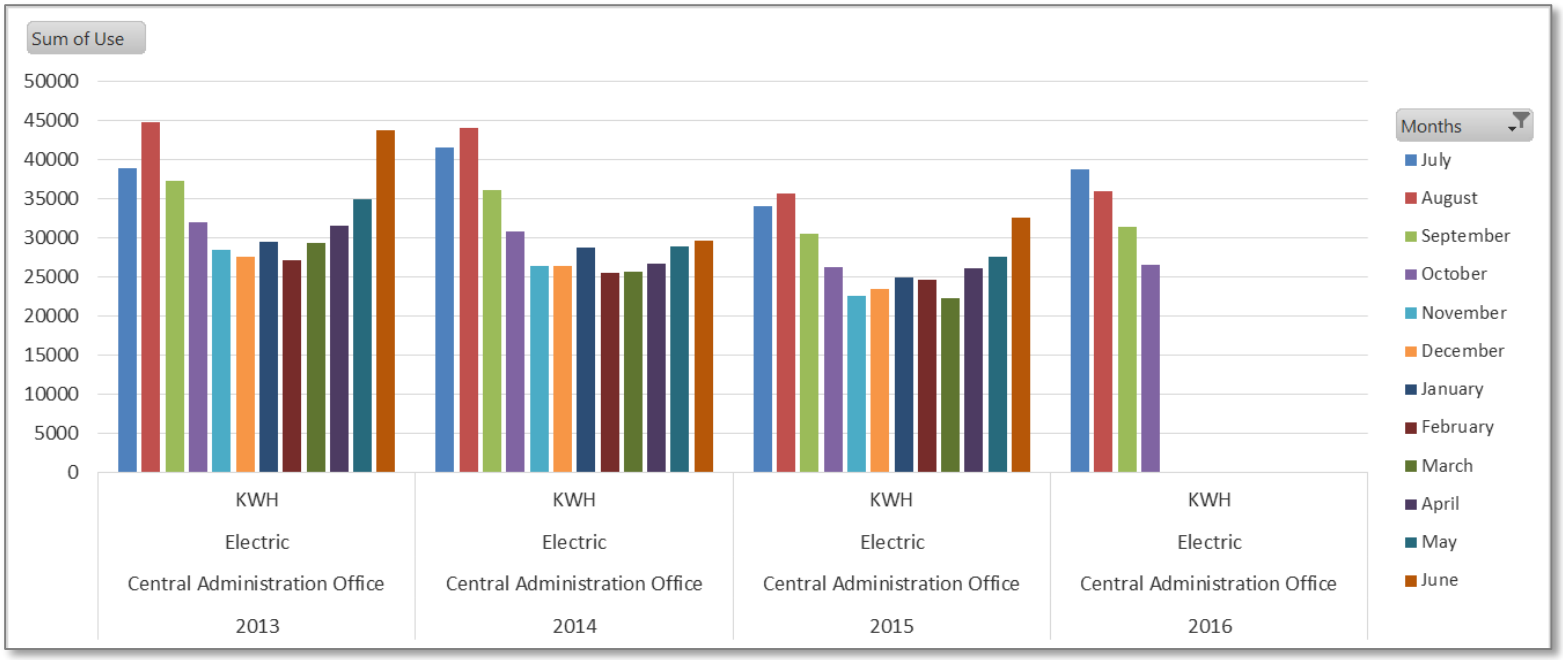
Where to Benchmark: Identifying the Appropriate Facilities

Though there are a number of GISD facilities for which primary utility costs are paid, it is not necessary to benchmark and provide reporting for *all* of these locations. Benchmarking should be focused on facilities in which conservation efforts can notably impact overall utility costs and culture change for facility occupants will provide the most benefit. With this in mind, **benchmarking and reporting will be provided for all campuses and primary administrative facilities.** Each facility will be benchmarked individually unless metering/billing structures require that certain facilities be benchmarked together (for instance, when two facilities share the same electric meter).

How to Calculate Baseline Values

Through the previous analysis of utility *costs*, electric and water were identified as the utilities with the greatest financial impact and where conservation efforts will be most effective. Baseline values and reporting for these utilities will be based upon *consumption,* as consumption values are the easiest for facility occupants to relate to when monitoring their conservation efforts and do not include cost variables that are outside of their control (such as utility rate charges).

In reviewing utility trends over recent years, it is typical for each facility's electric and water consumption to follow a standard pattern over the course of a fiscal year. (An example is shown below.)



Central Administration Office - Electric Consumption
Fiscal 2013 to early Fiscal 2016

In creating meaningful baseline values, it makes sense to consider this fiscal pattern, as it naturally accounts for the different types of activities that commonly occur over the course of a school year and captures the impact of natural weather patterns. In addition, utilizing multiple years of historical data for baseline calculations can aid in smoothing out any abnormal data points caused by unique situations (such as extreme weather, water leaks, equipment/maintenance issues, etc.). Given these considerations, baselines for each individual facility will be calculated in the following way:

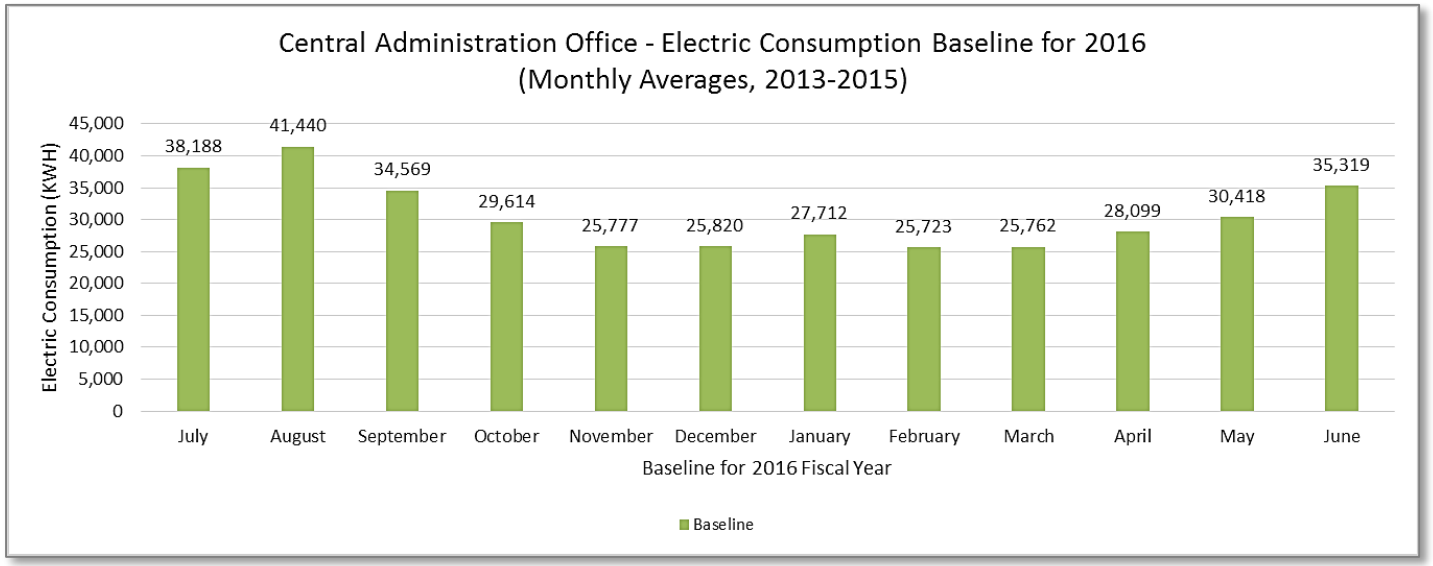
Baseline consumption values will be provided for each month within the fiscal year. Each monthly value is calculated by taking the average consumption for that particular month based on values from the previous 3 fiscal years.

An example of baseline calculations is shown below using electric consumption data for the Central Administration Office.

Total electric consumption, July of fiscal 2013: 38,919 KWH
Total electric consumption, July of fiscal 2014: 41,565 KWH
Total electric consumption, July of fiscal 2015: 34,080 KWH
Baseline value for July of fiscal 2016 = (38,919 + 41,565 + 34,080) / 3 = **38,188 KWH**

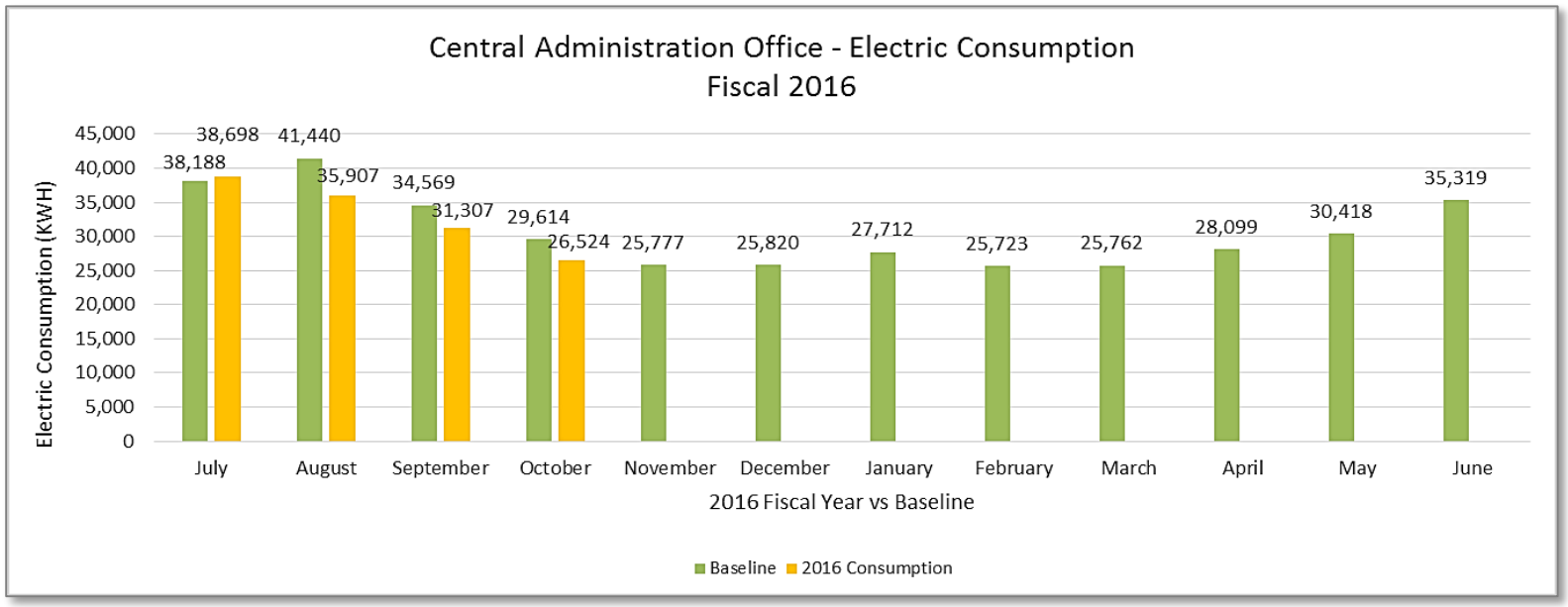
Subsequent months calculate as follows:

Year	Description	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
2013	Central Ad	38,919	44,687	37,174	31,914	28,360	27,569	29,486	27,039	29,370	31,451	34,898	43,726
2014	Central Ad	41,565	44,059	36,060	30,711	26,434	26,398	28,764	25,466	25,702	26,735	28,856	29,668
2015	Central Ad	34,080	35,575	30,472	26,218	22,538	23,493	24,885	24,663	22,215	26,110	27,499	32,564
Baseline for 2016		**38,188**	**41,440**	**34,569**	**29,614**	**25,777**	**25,820**	**27,712**	**25,723**	**25,762**	**28,099**	**30,418**	**35,319**



Once baseline values are calculated, actual consumption data for the current year can be compared to these values.

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Actual Consumption 2016		38,698	35,907	31,307	26,524								



This method can be applied to calculate annual electric and water baseline values for each GISD campus and administrative facility. Actual monthly consumption values can then be compared to these baselines over the course of the current fiscal year.

Adjustments

It may be necessary, under certain circumstances, to make adjustments to standard baseline calculations so that baselines are more comparable to current values. Adjustments may be considered for the following circumstances:

- Construction projects that notably change the square footage of the air conditioned space of a facility
- Major projects (such as HVAC upgrades) that notably impact the electric consumption of a facility

Future Benchmarking

In the near future, additional benchmarking of GISD facilities will occur through the use of Energy Star's Portfolio Manager program.