

# Mission Critical Solutions: critical expertise, global resources

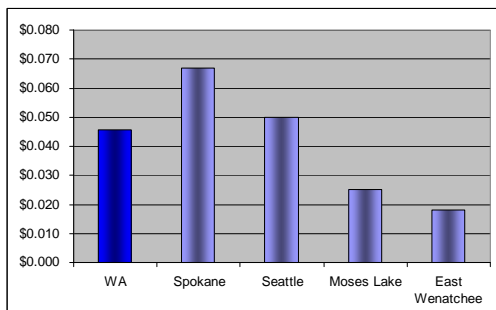
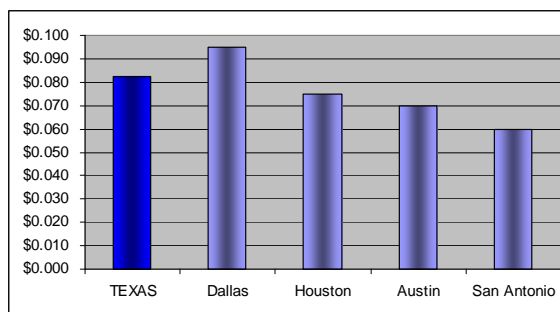


## Power & Approaching the Best Place to Build a Data Center.

By Brian Oley, Senior Associate, Mission Critical Solutions

As a member of the Jones Lang LaSalle Mission Critical Solutions (“MCS”) group, our team’s foundation developed out of client demand when enterprise users repeatedly asked the customary question, **“Where is the best place to build a data center?”** The majority of the time this question is posed, it’s primarily geared toward a predetermined set of geographic locations within the continental United States and/or based on some initial strategies set by a user. The typical motivation with this question is usually a client’s intuitive request to either help initiate a search or assist them in establishing a foundation of “starting points” for the optimal data center location. For this firm, however, the initiative drove us on a multi-faceted, global search.

In this particular investigation, the usual suspects, like environmental evaluations, tax considerations, and latency/fiber connectivity, were all in play, but in this case it’s safe to say that power drove all. The domestic U.S. power analysis drove us to our initial lesson learned on how to best evaluate this driver. The Energy Information Administration (“EIA”) was our starting point, and we began the analysis on the state level. As we discovered, there’s no real accurate measurement that connects geographic markets with favorable power rates when you take the high-level approach of a state-based power rate evaluation. Take Texas for example; according to the EIA, a large industrial user of power will average a rate of \$0.0826 / kWh ([http://www.eia.doe.gov/cneaf/electricity/epm/epmxfil5\\_6\\_a.xls](http://www.eia.doe.gov/cneaf/electricity/epm/epmxfil5_6_a.xls)). However, digging deeper in the Texas markets shows that, for a data center user, typical rates in Dallas might confirm rates of about \$0.095 to \$0.105 / kWh, Houston’s rate has been recently estimated at around \$0.075 / kWh, and those in San Antonio or Austin might reveal a rate of about \$0.06 to \$0.07 / kWh, respectively.



Similarly, Washington is another great example of how gauging data center favorability on a state level can hinder the accuracy of the outcome of an evaluation.

Remember, the state average is in place for a reason in that it’s only the mean. It does not give the best or the worst rates in a given state. It’s simply an average of all observed sources. City level examinations are extremely important to revealing how suitable a data center area might be.

In addition to the current, local level power rates, another very significant characteristic important to data center users is to find out where these rates are going. Approaches to a power rate’s trend analysis could form from a number of approaches, including utility ownership, generation mix, and a time series analysis of historical rates. After years of interaction with various power utilities and hundreds of hours spent in power rate data analysis, I’ve found that, in general, rates tend to be more favorable and rate volatility tends to be a little more stable in regulated utility markets. Based on this experience, one of my first steps to pursuing a favorable power market is to determine if a utility in an area is regulated or deregulated. Then, typically, conduct pursuit in the favorable regulated markets.

Furthermore, when looking at a stated rate, especially when cited from a utility, one should examine closely the structure of the stated rate, to ensure that an 'apples to apples' comparison is standard from one rate to another. For example, one utility might cite an across the board low power rate (in US dollars per kilowatt hour), appearing favorable compared to another given utility. However, comprehensible communication and clarification with the aforementioned 'favorable' utility needs to take place to ensure that all rates are normalized. In other words, make sure extraneous, additional extras to the base rate, such as fuel adjustment charges, expected taxes, and applicable franchise fees, are included. Don't overlook this material measure as a rate, albeit minimal on a cost per kilowatt hour, can drastically understate operating expenses relative to data center usage. Just visualize that, for an enterprise user, every penny per kWh up or down can equate to literally millions in annual energy expense.

In looking at a utility's generation mix, you must really communicate with a user to uncover and focus on what part of this is important to them. One should gather as much intelligence from all levels (IT and Real Estate personnel) to uncover a solid corporate strategy, as a material change in this over time could significantly affect the outcome of the trend analysis examining the generation mix. For example, perhaps a mix of renewable resources might reveal to be more important than simply the cost of power, but cost still remains a viable concern. In this case, a site selection specialist might seek for those mixes with a high content of hydro that is already established in the mix, as hydro is one of the sources that is more operationally efficient than any other of the renewables. Unlike the power rate analysis, the generation mix can rely a little more on the EIA's data on the state observations in that geographic proximity to certain resources (like water flow) in a mix are a little more consistent than the actual rates that subsets of a state might pay. The generation mix by state can be found on the EIA's website under "State Energy Profiles"

In conclusion, the world is developing an increasing reliance on data center's functionalities. As the popularity of the data center continues to captivate audiences with hefty capital investments, increasing demands for power consumption, Internet superpowers growing stronger and more monopolistic with the data management control, and the market's inherent violation of supply-demand economics, where demand has and will continue to outpace supply now and in the future, the public continues to grow more and more sophisticated on these facilities. The "hows" of what it takes to build and operate data centers is becoming less of a mystery. From observing this specific market behavior over the last three (3) years, various municipalities, utilities, and economic developments continue to devote full-time resources to attract data centers. Some have data center specific websites established that depict the community's data center facts and figures supporting data centers (such as existing legislation for data center tax abatements) and others maintain full time staffing dedicated to attracting these buildings to their respective jurisdictions.

Similarly, as these occurrences of resources dedicated to data centers become more frequent, the accuracy and availability of data center, site-selection intelligence that can be gathered from these sources are becoming more and more reliable. In theory, and most of the time in reality, the amount of information at the development level is trustworthy and can save a great deal of time for a site selection team. A due diligence and quality assurance is always necessary, but these resources are there for business development and should always be considered as timing is frequently a valid customer concern.

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