

Technology Advisory

The Importance of the SAIDI Number

What Has Changed?

Starting in 2014, the U.S. Energy Information Administration (EIA) required electric distribution utilities to submit their yearly distribution reliability scores, or System Average Interruption Duration Index (SAIDI), on the EIA-861: Annual Electric Power Industry Report. The data report to EIA is then made public to interested stakeholder on their website. In the last few years, this data has been heavily scrutinized by stakeholders and based on the data reported, distribution cooperatives are “seen” to be less reliable than their other utility counterparts. This view conflicts with results from the annual NRECA Reliability Benchmarking study.

What Does SAIDI Measure?

SAIDI scores (the most important reliability score) measure the amount of time any given utility’s customer is without power. SAIDI is measured in minutes. A SAIDI score of 50 means that the utility’s average customer was without power for 50 minutes throughout the year.

NRECA has examined why the EIA data is inconsistent with data used for our Benchmarking study. Having accurate data is critical to convey the actual state of co-ops’ reliability; and striving for the lowest SAIDI possible is good business sense, as part of ensuring reliability of service for co-op members.

What Do Cooperatives Need to Know?

Both the Institute of Electrical and Electronics Engineers (IEEE) Distribution Reliability Working Group (DRWG) and the NRECA Distribution Reliability Benchmarking Group (RBG) Studies show typical SAIDI scores fall within the range of 20-400 minutes/year. While many, if not most, Rural Electric Cooperatives (RECs) have reported good to excellent distribution SAIDI reliability scores (low numbers) to EIA, some unfortunately have submitted significantly poor numbers (high SAIDI numbers). In fact, there are numerous RECs reporting questionable EIA SAIDI scores above 400 min/year and in some cases, the reported SAIDIs are greater than 1,000 min/year, which is statistically unusual when compared to the typical range. The higher the SAIDI outage numbers (higher outage minutes), the lower the distribution reliability.

There are potentially two main culprits for why RECs are reporting significantly higher SAIDI than the norm. First, the IEEE-1366 standardized methodologies used for calculating SAIDI is complex, requiring algorithms that are difficult to code in simple Excel worksheet. Numerous RECs do not use an Outage Management System (OMS) that accurately calculates the correct SAIDI based on the IEEE-1366 methodology. Most use custom-made Excel/access databases, which are prone to coding and input errors.

Secondly, as required by IEEE-1366, the number of years and type of outage data that are needed or excluded to calculate the correct SAIDI are either missing or containing input errors. For example, a common error experienced by RECs results from a misunderstanding of the definition of sustained outages, which are required as data input.

IEEE-1366 requires that only outages that are greater than five minutes, called *sustained outages*, shall be included in calculating the SAIDI. However, numerous RECs include 5 minutes outages in their input data, which is incorrect. By adding the additional 5 minutes duration outages, the overall SAIDI calculation is skewed and the final calculation is incorrect. In summary, it is critical that both the IEEE-1366 methodology is used and the precise outage data are correctly inputted to accurately calculate the yearly SAIDI.

What is the Impact on Cooperatives?

There are two issues here affecting cooperatives:

- Ensuring that SAIDI numbers are calculated correctly, and
- Striving for the lowest SAIDI number possible.

Creating the wrong impression

If SAIDI numbers are calculated incorrectly, the co-op, EIA, and member-consumers do not have an accurate picture of the co-op's reliability. If the calculated numbers are inaccurately higher than actual, this gives the incorrect impression that cooperatives are not as reliable as in actuality, hurting the co-op's reputation.

Continually improving reliability

If a co-op's SAIDI number is truly high, it indicates a significant cost for both the co-op and the member-consumer and an area for improvement. Poor reliability scores cost both the RECs and their members significant amounts of money per year. The higher the score, the more minutes on average the consumer is without power. If the consumer is without power, there can be no use of power and therefore, the utility is losing money by not being able to serve the load. Likewise, the loss of power is costly to the consumer in time and money.

For example, a SAIDI of 50 means the utility is unable to bill the customer for 50 minutes within the year. A utility having outages on 10,000 meters potentially loses revenue of 500,000 minutes of billable electric service (50 mins x 10,000 Meters). In addition, research shows that the additional cost of restoring power is significantly higher than the revenue lost, due to the labor and equipment expenses paid for the line crew; thereby, compounding the dollar losses to the utility.

NRECA's Web Portal Helps Cooperatives with Accuracy and Insights

NRECA's Business and Technology Strategies (BTS) is using an online distribution reliability web application that enables cooperatives to calculate SAIDI automatically and accurately based on the IEEE-1366 standard. This web portal, which is actively used by the NRECA RBG study, can track and analyze outage data, benchmark cooperatives nationwide, and provide real-time data analytics through data visualization tools. RECs can easily input their outage data in real-time via online from their existing databases within minutes.

In the typical distribution utility, the Operations Department "knows" where to focus resources; however, we have proven that often times the conventional knowledge is not accurate. This results in spending resources in areas that do not positively improve the SAIDI scores. By utilizing the data analytics approach, scarce resources can be leveraged to their full benefit.

There are already over 100 cooperatives that are using the BTS web portal and have accurately submitted the correct SAIDI to EIA in the past few years. We encourage other distribution cooperatives to use this free resource to calculate the correct SAIDI for EIA reporting, and to benchmark their cooperative against others in the nation.

**Join the NRECA Reliability Benchmarking Group
and
Use the FREE BTS Web App for Calculating SAIDI**

<http://webinar.pwrmetrixonline.com/NRECARegistration.aspx>

Additional Resources

EIA-861: Annual Electric Power Industry Report:
<https://www.eia.gov/electricity/data/eia861/>

Contacts for Questions

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