



LAKE WORTH BEACH

Electric
UtilitiesSM

CITIZEN OWNED ENERGY

Electric Reliability Presentation

1.31.2023

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CAIDI - Customer Average Interruption Duration Index

The average time to restore service to interrupted customers within a specified area of service over a given period of time.

SAIDI – System Average Interruption Duration Index

The average minutes of service interruption duration per customer served within a specified area of service over a given period of time.

SAIFI – System Average Interruption Frequency Index

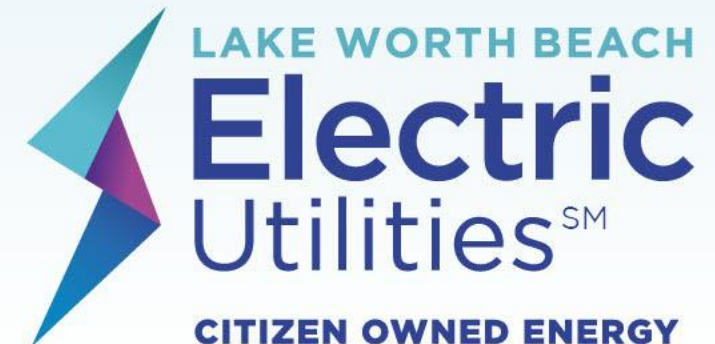
The average number of Service Interruptions per customer within a specified area of service over a given period of time.

MAIFI – Momentary Average Interruption Event Frequency Index

The average number of Momentary Interruption Events recorded on primary circuits for a specified area of service over a given period of time.

L-Bar – Average Duration of Outage Events

The sum of each outage event duration for all outage events occurring during a given time period, divided by number of outage events over the same time period within a specific area of service.

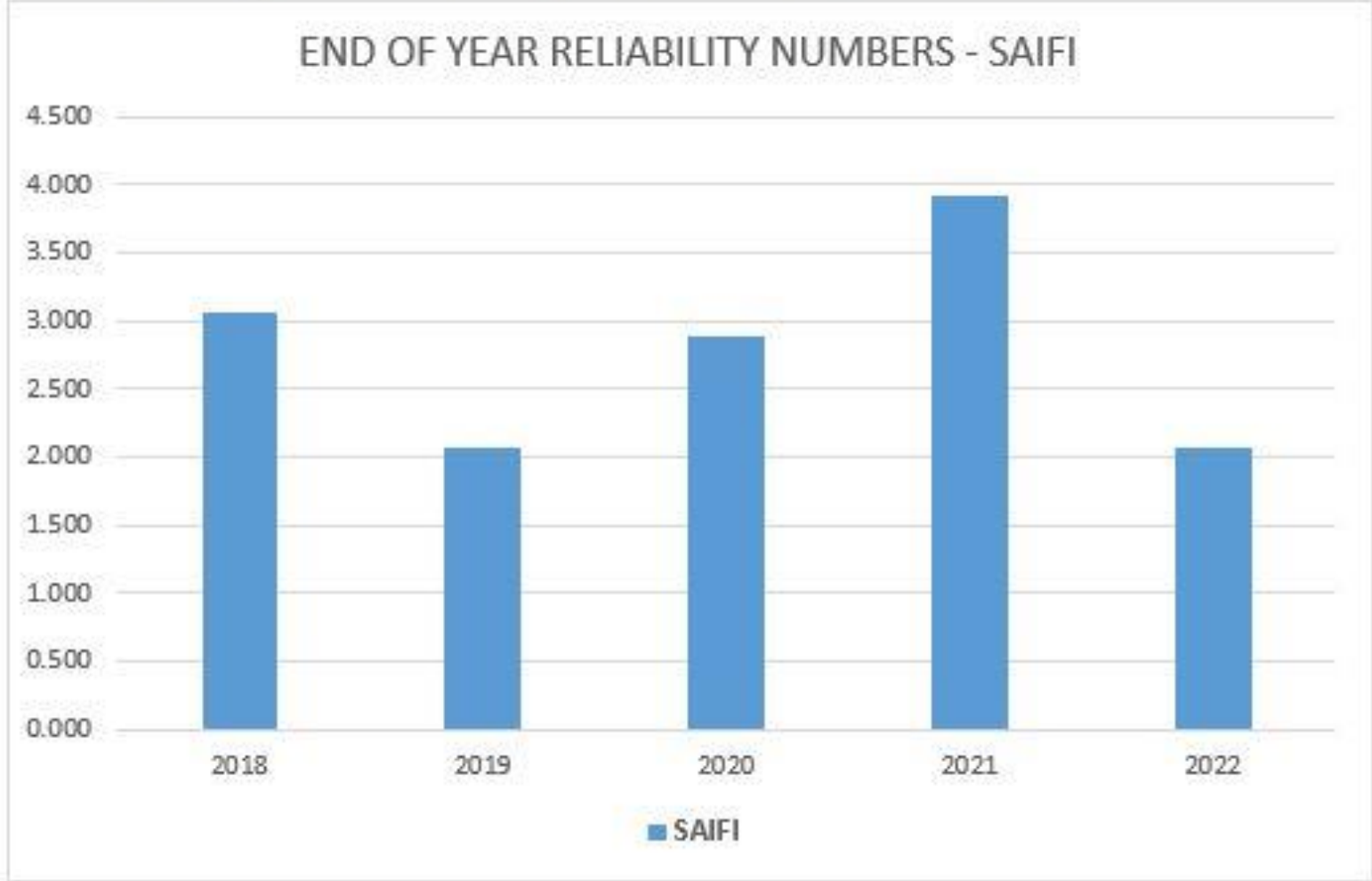


SAIFI – Measures the average frequency of interruptions for the average customer.

END OF YEAR RELIABILITY NUMBERS - SAIFI

	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<u>SAIFI</u>	3.073	2.078	2.889	3.917	2.070
<u>% Change</u>		-32.4%	39.0%	35.6%	-47.2%

END OF YEAR RELIABILITY NUMBERS - SAIFI



$$\frac{\text{Customers that experienced an outage}}{\text{Number of customers served}}$$

$$\frac{56,940}{27,510} = 2.070$$

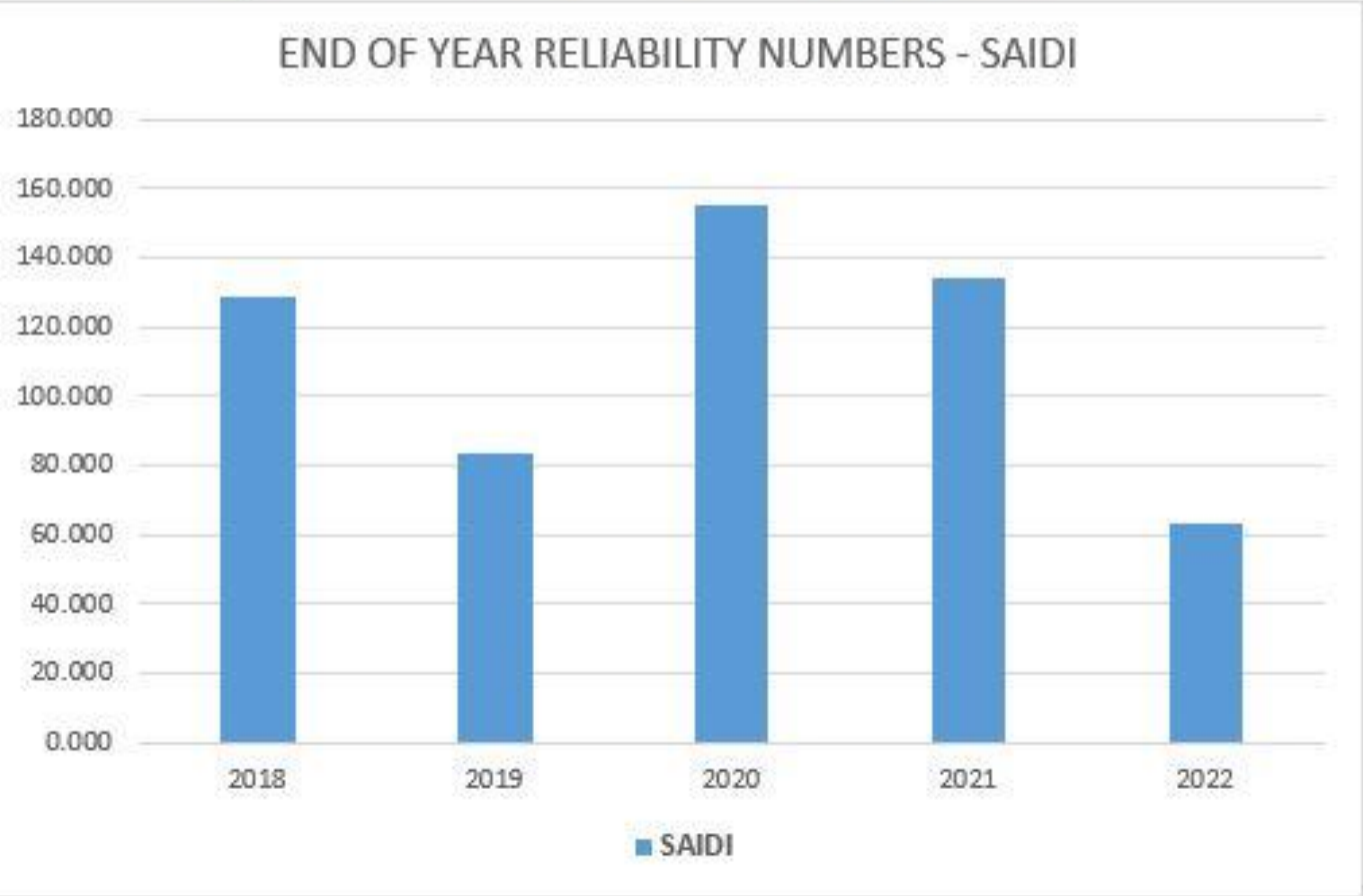
Last year was 107,050 impacted.
A reduction of 47.2%



SAIDI – Measures the average duration of interruptions for the average customer

Customer minutes of interruption (CMI) equals the number of customers out times the duration of the outage in minutes.
 1 customer out of 100 minutes = 100 CMI
 10 customers out for 10 minutes = 100 CMI

<u>END OF YEAR RELIABILITY NUMBERS - SAIDI</u>					
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<u>SAIDI</u>	128.861	83.601	154.835	134.068	63.384
<u>% Change</u>		-35.1%	85.2%	-13.4%	-52.7%



Customer minutes of interruption
 Number of customers served

$$\frac{1,743,689}{27,510} = 63.384$$

Last year was 3,663,672 CMI
 A reduction of 52.7%

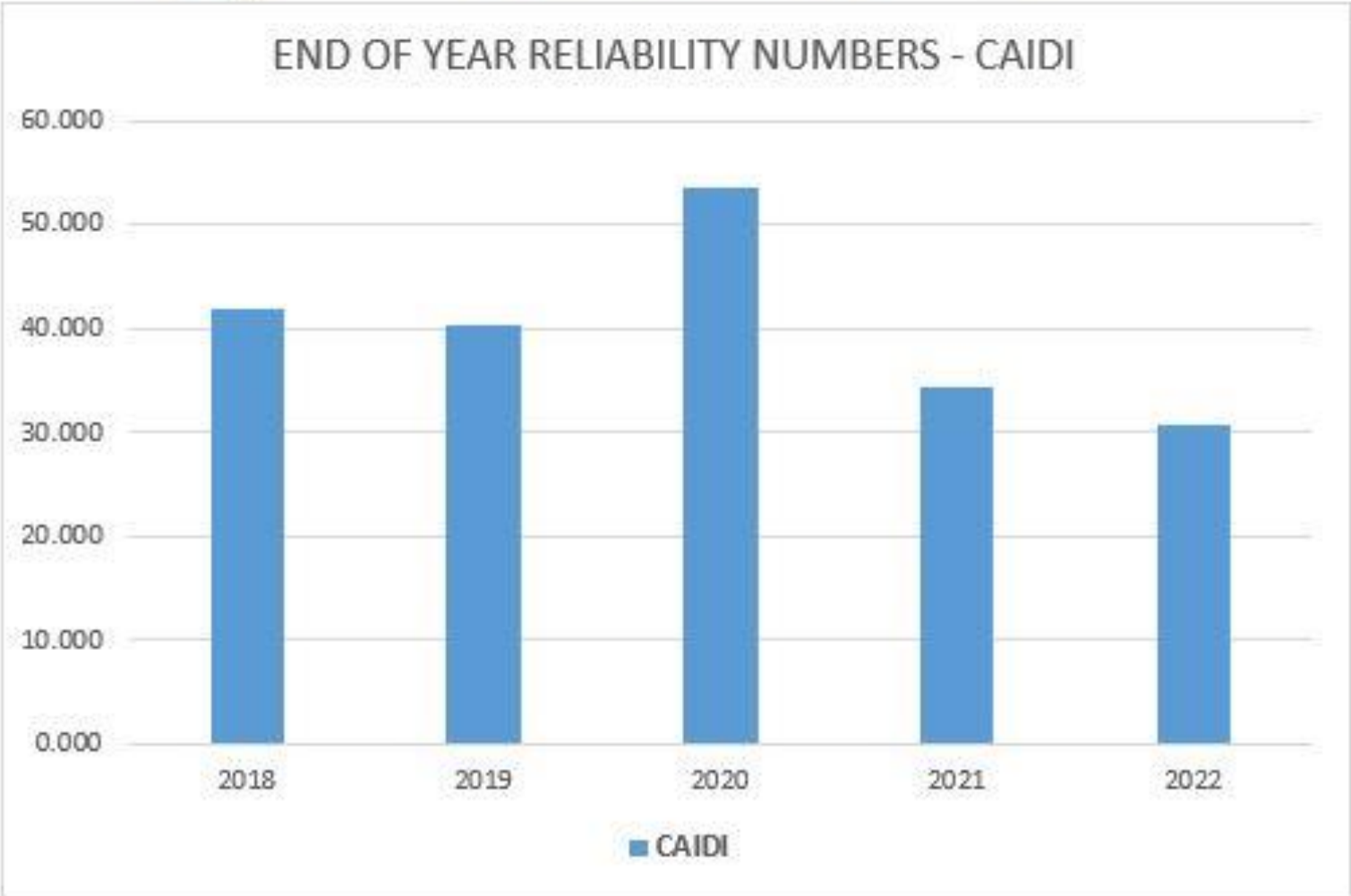


CAIDI – Measures the average repair time experienced by the average interrupted customer

END OF YEAR RELIABILITY NUMBERS - CAIDI

	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<u>CAIDI</u>	41.939	40.226	53.590	34.224	30.623
% Change		-4.1%	33.2%	-36.1%	-10.5%

END OF YEAR RELIABILITY NUMBERS - CAIDI



$$\frac{\text{SAIDI}}{\text{SAIFI}} = \text{CAIDI}$$

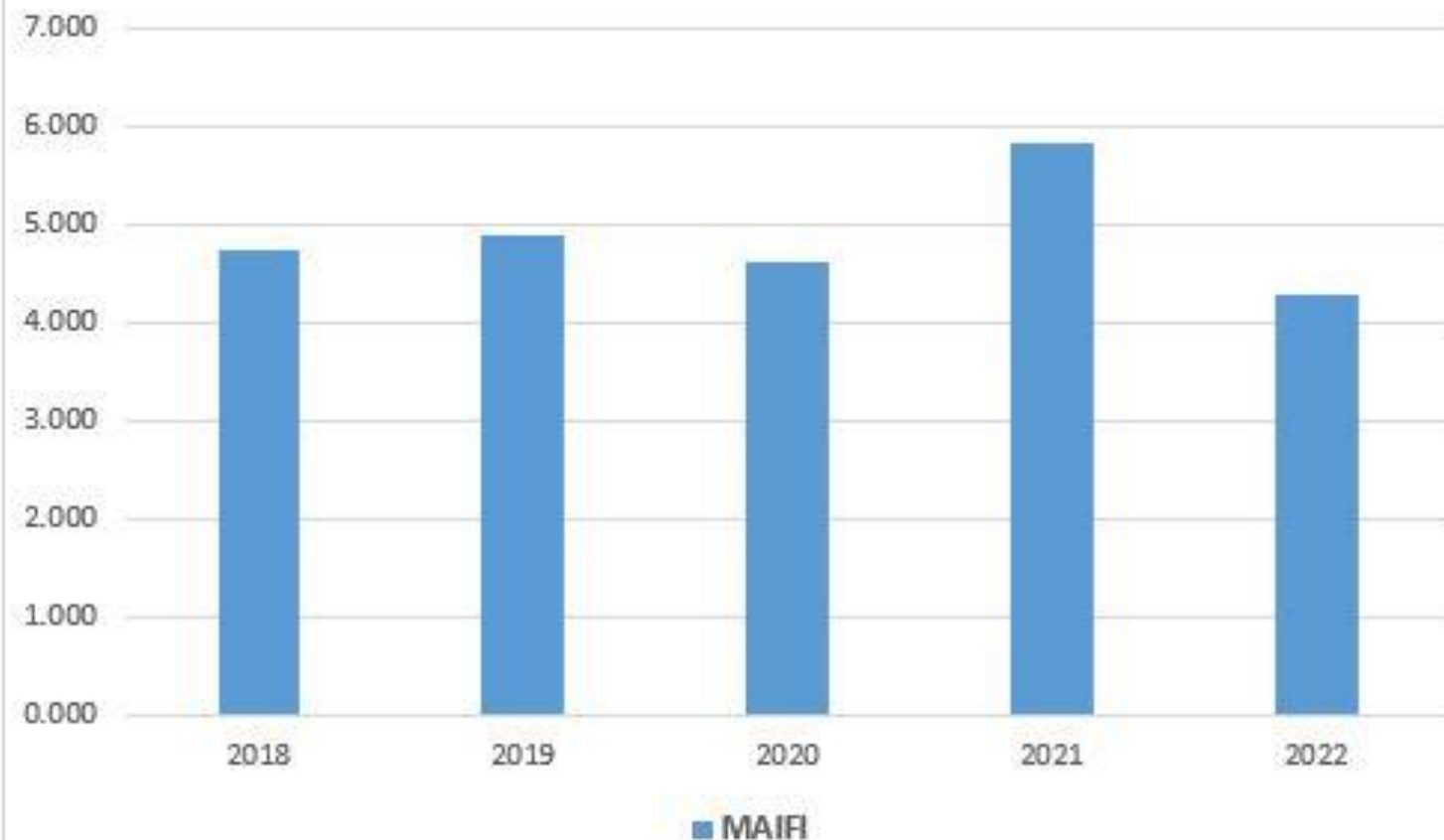
$$\frac{63.384}{2.070} = 30.623$$



MAIFI – measures the average frequency of momentary interruption events for the average customer.

<u>END OF YEAR RELIABILITY NUMBERS - MAIFI</u>					
	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<u>MAIFI</u>	4.733	4.871	4.616	5.820	4.280
<u>% Change</u>		2.9%	-5.2%	26.1%	-26.5%

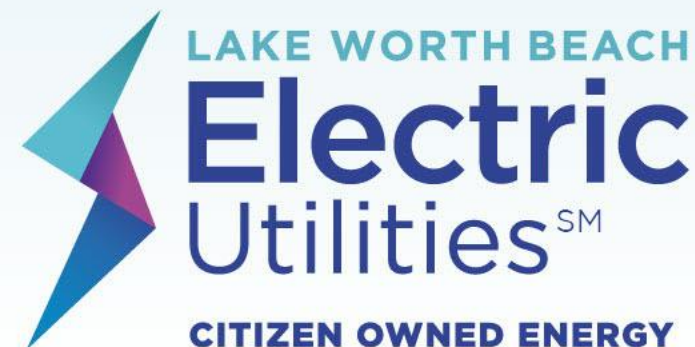
END OF YEAR RELIABILITY NUMBERS - MAIFI



Customers that experienced a momentary
Number of customers served

$$\frac{117,753}{27,510} = 4.280$$

Last year was 159,035 CME
A reduction of 26.5%

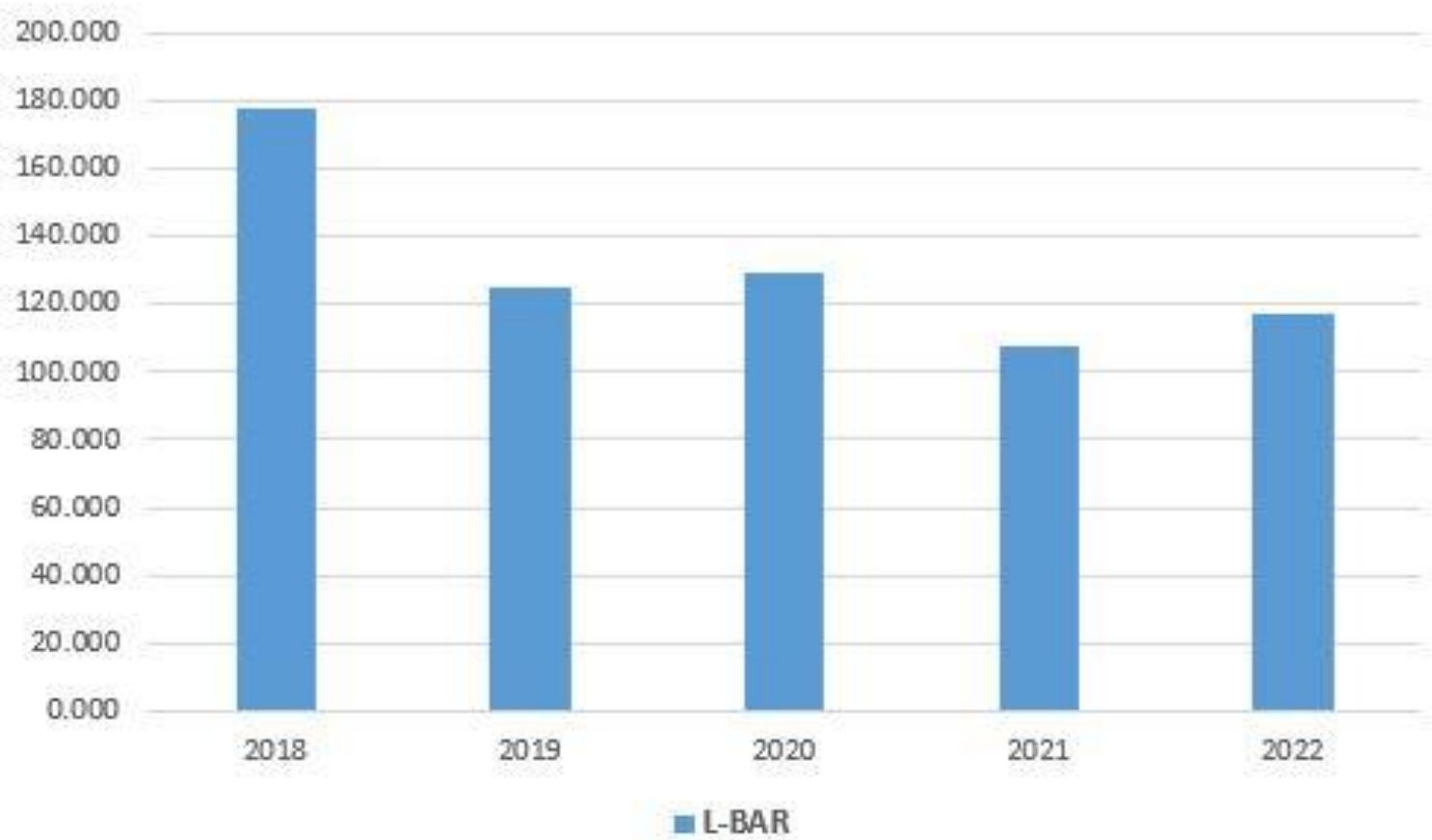


L-BAR – Measures the average length of a single outage

END OF YEAR RELIABILITY NUMBERS - L-BAR

	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
<u>L-BAR</u>	177.581	124.631	129.319	107.202	116.680
% Change		-29.8%	3.8%	-17.1%	8.8%

END OF YEAR RELIABILITY NUMBERS - L-BAR



$$\frac{\text{Sum of each outage in minutes}}{\text{Number of outages}}$$

$$\frac{35,354}{303} = 116.680$$



Projects underway that are driving the numbers down...

Main Yard Control House – Insulator and Switch Project



Projects underway that are driving the numbers down...

Main Yard Switch Project



Insulators from 1966

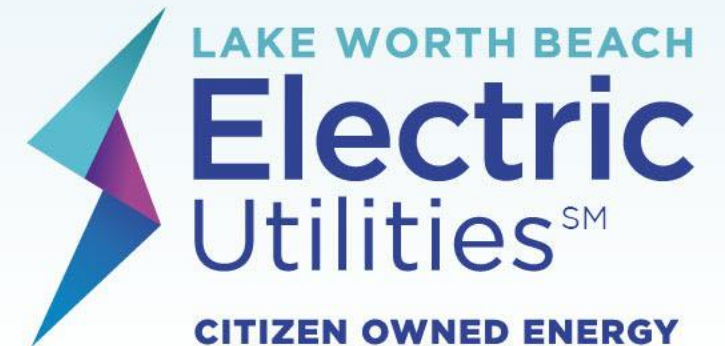


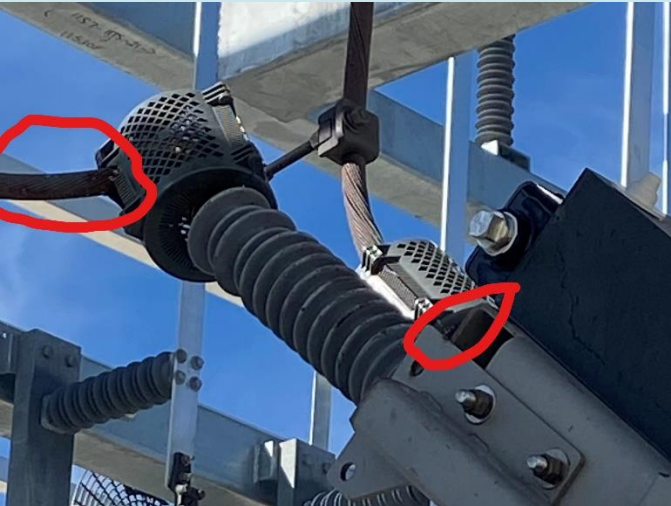
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Main Yard Insulator and Switch Project

TD-71 and TD-72
138/26kV 50MVA
Transformers

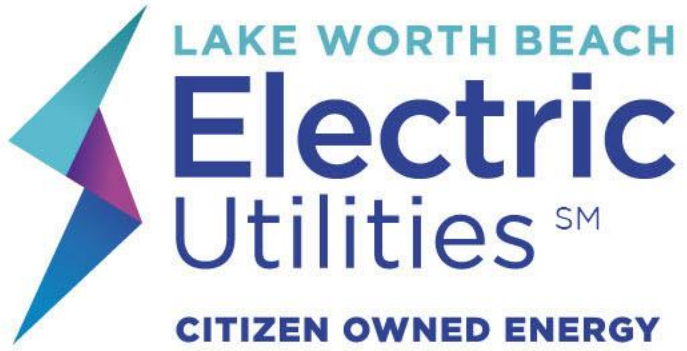
Structural Steel for Canal Station





Recent animal contacts causing major
Substation outages





Thank you... Questions?

