Utilizing Real-Time Outage Data for External and Internal Reporting

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ComEd
An Exelon Company

Introduction

- **Outage reporting is becoming more critical to utilities, external entities and to the media**
- **Utilities, external entities and customers alike are looking for the most up-date information so that informed decisions can be made**
- **There are many different methods to display outage information for both internal and external reporting purposes**

ComEd System Overview

- 3.8 Million Customers
- 11,300 Square Miles
- 5,300 Distribution Circuits
- 43,700 Distribution Overhead Miles
- 44,100 Distribution Underground Miles
- 1.4 Million Poles
- Over 740 Substations
- Over 5,700 Transmission Miles

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Geographical Outage Reporting

- **ComEd's "eOutage" web tool utilizes information from various systems**
  - Outage Management System (OMS)
  - Geographic Information System (GIS)
  - Customer Information System (CIS)
- **"eOutage" is available internally to the company and externally for towns and IEMA**
- **Provides information to assist in making decisions on crew-movement and utilization of emergency services**

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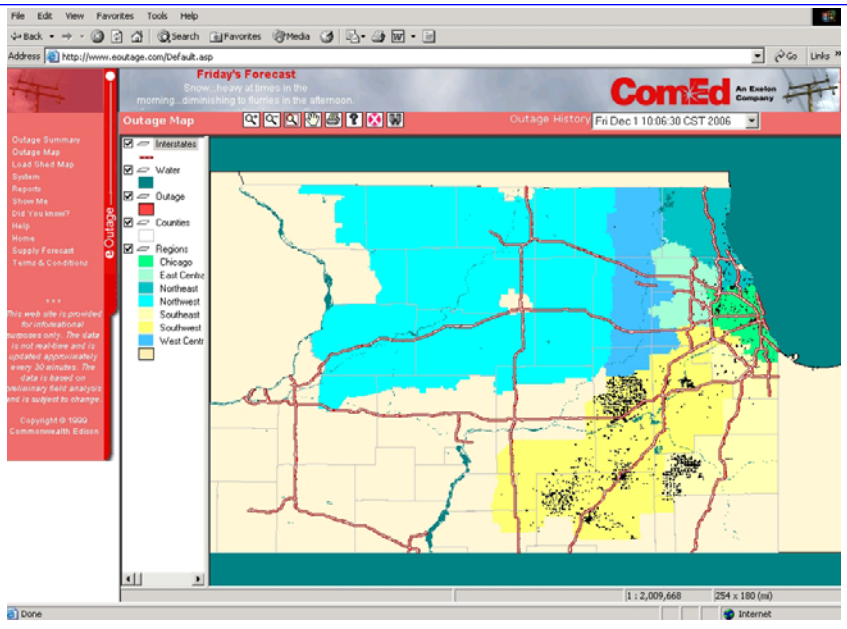
“eOutage” Outage Map



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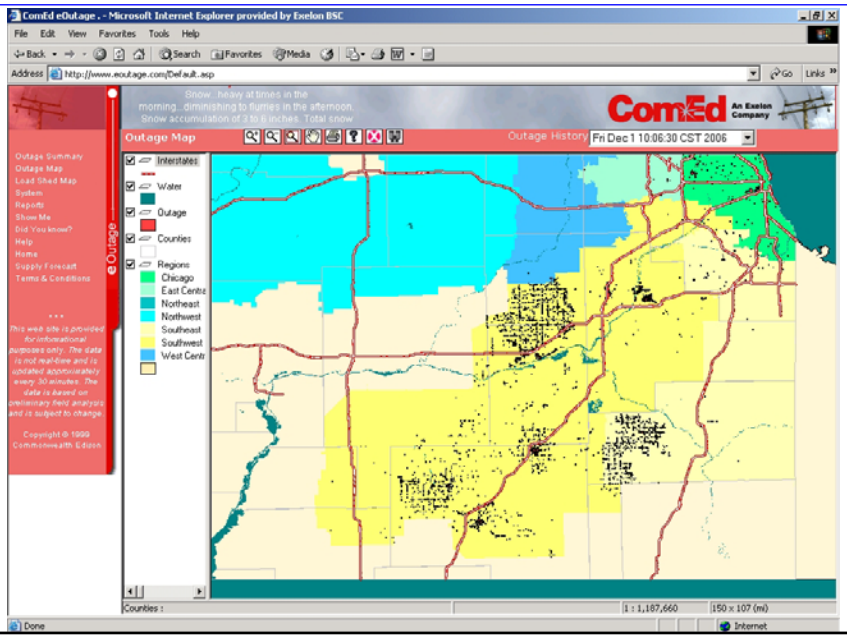
“eOutage” Outage Map - Drill Down



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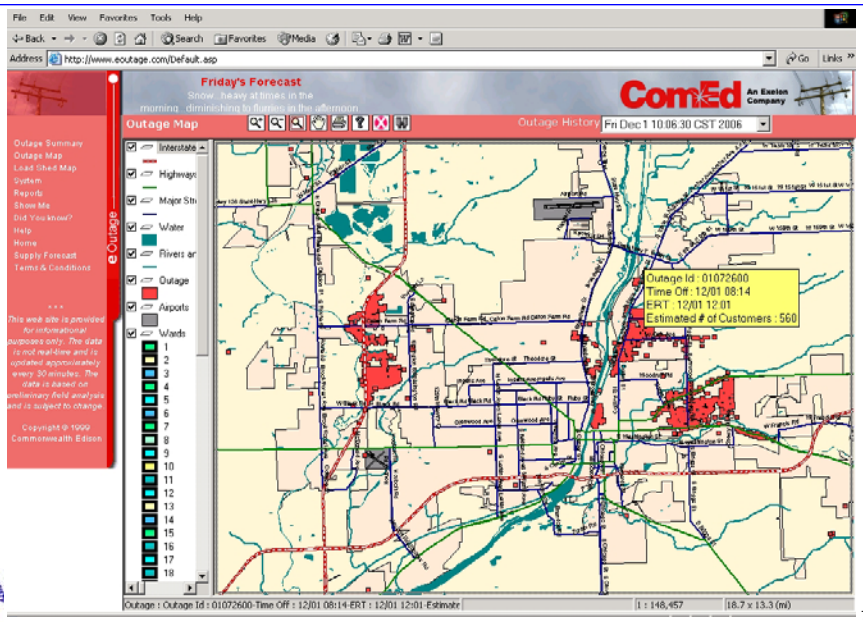
“eOutage” Outage Map - Detailed Drill Down



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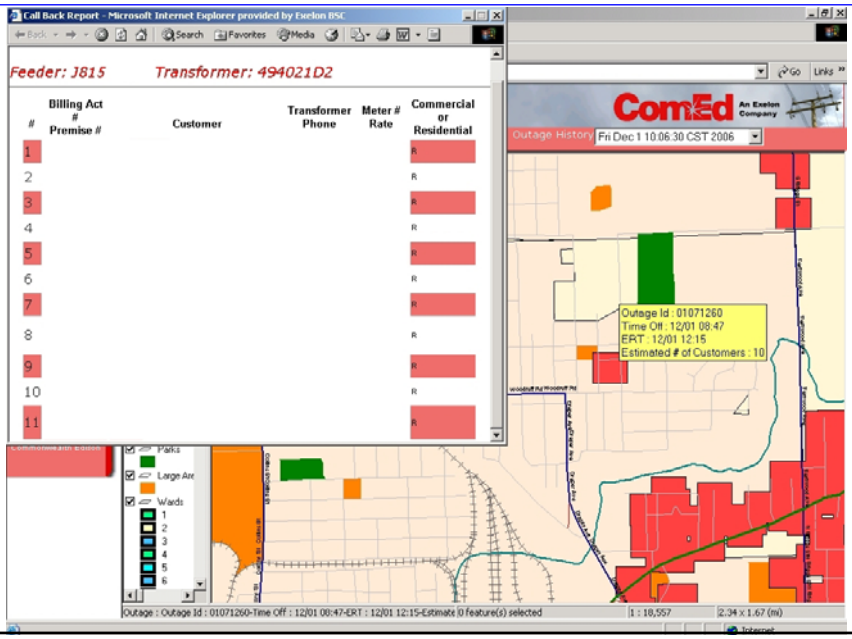
“eOutage” Outage Map – Outage Details



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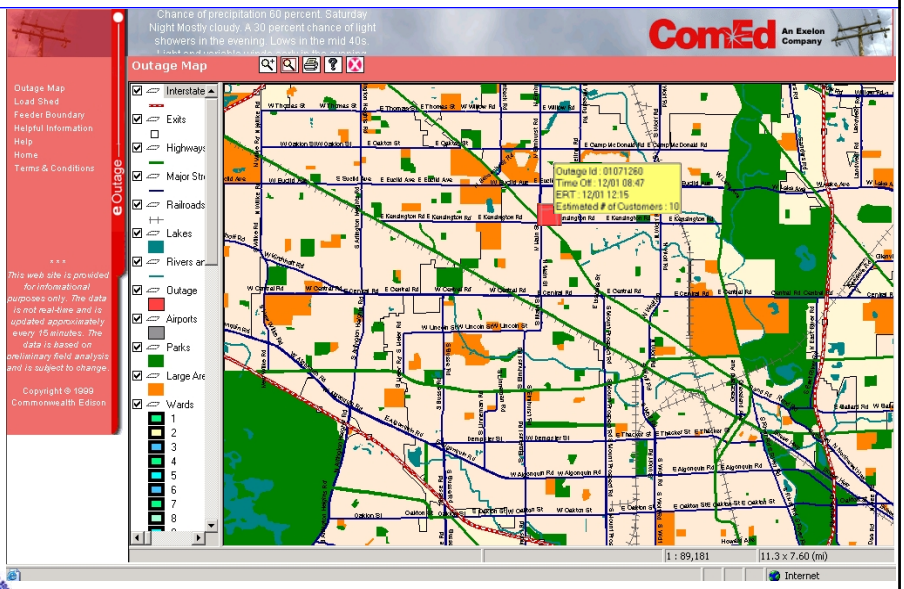
“eOutage” - Town View



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Real Time Outage Reporting

- **Web reports can be specifically designed to:**
  - **Monitor OMS ticket status**
  - **Monitor Estimated Time of Restoration (ETR)**
  - **Keep town officials informed**
  - **Keep media outlets informed**
  - **Assist in determining where and how many resources are needed most during storms**
  - **Provide current reliability indices performance**

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OMS Ticket Status Report

OMS Ticket Status

As Of 12/1/2006 1:03:26 PM Print Document

Select Outage Date Range:

From Date: 12/1/2006 Hr: 00 :00:00 To: 12/1/2006 Hr: 07 :59:59

Outage Type: All/Part Outs & Wire Down P/H Dispatch Type *(updated)*: All Age In Hrs >= All Go Reset

Area Type DMC Area System

OMS is current

Outage Start Date & Time Range: From 12/1/2006 00:00 To 12/1/2006 07:59

Click on the Open Ticket count to view the outage tickets

Click here for Storm CAIDI Projection

System	Outage Type	Open Tickets	Estimated Customers Out

The Daily/Storm Status Report is to be used for Customer Counts

		OMS TOTAL TICKETS	OMS TOTAL CUSTOMERS	OMS CHICAGO TICKETS	OMS CHICAGO CUSTOMERS	OMS NORTHERN TICKETS	OMS NORTHERN CUSTOMERS	OMS SOUTH TICKETS	OMS SOUTH CUSTOMERS	OMS WEST TICKETS	OMS WEST CUSTOMERS
OMS	DEVICE	42	5059	7	535	4	128	30	4388	1	8
OMS	FEEDER	3	2295	0	0	0	0	3	2295	0	0
OMS	CUSTOMER	67	67	20	20	6	6	41	41	0	0
OMS	SERVICE TRANSFORMER	17	301	10	231	1	24	6	46	0	0
OMS Total		**129**	**7722**	**37**	**786**	**11**	**158**	**80**	**6770**	**1**	**8**

View All OMS Tickets

Outage Ticket Status Detail Report

Outage List

Select Outage Date Range:

From Date: 4/19/2008 Hr: 11 :00:00 To: 4/19/2008 Hr: 12 :59:59 Age In Hrs >= All

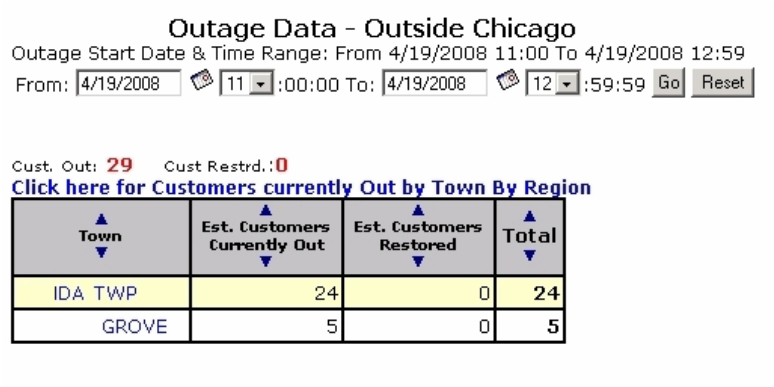
Outage Type: All/Part Outs & Wire Down P/H Dispatch Type *(updated)*: All Device Cat: All Go Reset Export To Excel Print Document

Click on the "*Est Cust Out*" number to view customers who called in that are still without power!

OMS 1 Records As of 4/19/2008 12:48:07 PM

Outage No	Area	Feeder	Device ID	Device Cat.	Otg Type	Outage Off Time	Est Cust Out	Outage Dur Hrs	Dispatcher	Vrfd Otg	Last Assigned/ Enroute/ Arrival Time	Assigned/ Enroute/ Arrival Status	Status Dur (Hrs)	Last Crew Assigned	ETR
1527082	CRYSTAL LAKE SOUTH	E7	172490	DEVICE	All Out	4/19/2008 12:25:32 PM	28	0.4		X	4/19/2008 12:47:17 PM	ENROUTE	0.0		4/19/2008 2:45:00 PM

Town Status Report



Outage Data - Outside Chicago

Outage Start Date & Time Range: From 4/19/2008 11:00 To 4/19/2008 12:59

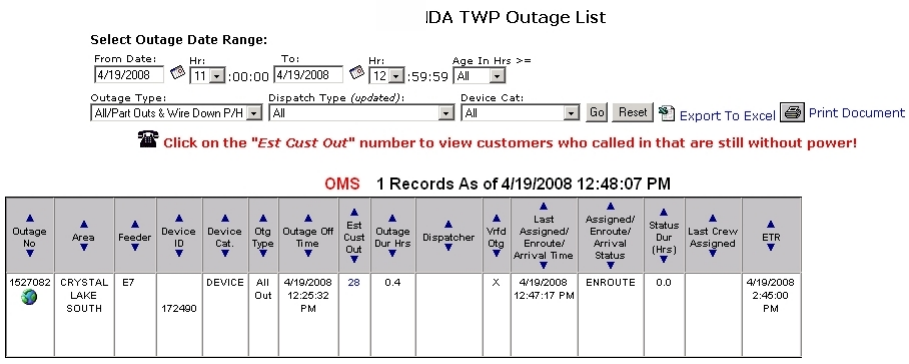
From: 4/19/2008 11 :00:00 To: 4/19/2008 12 :59:59 Go Reset

Cust. Out: 29 Cust Restrd.: 0

Click here for Customers currently Out by Town By Region

Town	Est. Customers Currently Out	Est. Customers Restored	Total
IDA TWP	24	0	24
GROVE	5	0	5

Town Status Detail Report



IDA TWP Outage List

Select Outage Date Range:

From Date: 4/19/2008 Hr: 11 :00:00 To: 4/19/2008 Hr: 12 :59:59 Age In Hrs >= All

Outage Type: All/Part Outs & Wire Down P/H Dispatch Type (updated): All Device Cat: All Go Reset Export To Excel Print Document

Click on the "*Est Cust Out*" number to view customers who called in that are still without power!

OMS 1 Records As of 4/19/2008 12:48:07 PM

Outage No	Area	Feeder	Device ID	Device Cat.	Otg Type	Outage Off Time	Est Cust Out	Outage Dur Hrs	Dispatcher	Vrfd Otg	Last Assigned/ Enroute/ Arrival Time	Assigned/ Enroute/ Arrival Status	Status Dur (Hrs)	Last Crew Assigned	ETR
1527082	CRYSTAL LAKE SOUTH	E7	172490	DEVICE	All Out	4/19/2008 12:25:32 PM	28	0.4		X	4/19/2008 12:47:17 PM	ENROUTE	0.0		4/19/2008 2:45:00 PM

Estimating Restore Time

- **Estimated Restore Time Report Utilizes**
  - **Current Crew Staffing**
  - **OMS outage counts**
  - **OMS outage extent**
  - **Repair times**
  - **Drive times**
  - **"What if" scenarios**

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Estimated Restore Time Report

Estimated Storm Restore Time Based on SRP Overhead Crews Available

As Of 12/1/2006 11:03:24 AM Print Document

Select Outage Date Range:

From Date: 11/30/2006 Hr: 00 :00:00 To: 12/1/2006 Hr: 23 :59:59 Go Reset What If Condition

OMS is current

Outage Start Date & Time Range: From 11/30/2006 00:00 To 12/1/2006 23:59

A Green Background indicates there are Extra Crews Available. Calculation excludes services.
A Yellow Background indicates an ERT of 8 hours or more. Extra Crews are required.

STREATOR has the longest Estimated Device/XFMR ERT - 12/3/2006 03:03
STREATOR has the longest Estimated Service ERT - 12/9/2006 15:03

RGN	DMC	Drive Time (Min)	Repair Time (Min)	SRP OH Crews (Curr/Nxt) Shft	SRP Cntrctrs (Curr/Nxt) Shft	SRP Other OH Help (Curr/Nxt) Shft	SRP Total OH Crews (Curr/Nxt) Shft	Extra OH Crews Curr Shft (1)	Open Device Otgs	Open Xfmr Otgs	Est. Device/Xfmr ERT (Hrs)	Est. Device/Xfmr ERT
C	CN1	60	120	5/8	0/0	0/0	5/8	0	10	11	**10.0**	**12/1/2006 21:03**
C	CS1	60	120	10/10	0/0	0/0	10/10	0	4	4	**3.0**	**12/1/2006 14:03**
N	GLB	60	120	9/11	0/0	0/0	9/11	5	1	2	**3.0**	**12/1/2006 14:03**
N	LIB	60	120	10/0	0/0	0/0	10/0	4	3	2	**3.0**	**12/1/2006 14:03**
C	MAY	60	120	6/2	0/0	0/0	6/2	0	8	6	**7.0**	**12/1/2006 18:03**
N	MPR	60	120	11/16	0/0	0/0	11/16	1	8	0	**3.0**	**12/1/2006 14:03**
N	SKO	60	120	10/11	0/0	2/0	12/11	0	13	4	**6.0**	**12/1/2006 17:03**
W	AUR	60	120	5/6	0/0	0/0	5/6	3	1	1	**3.0**	**12/1/2006 14:03**
W	CRY	60	120	4/7	0/0	0/0	4/7	4	0	0	-	-
W	DIX	60	120	5/7	0/0	0/0	5/7	5	0	0	-	-
W	DKB	60	120	5/8	0/0	0/0	5/8	5	0	0	-	-
W	ELG	60	120	4/6	0/0	0/0	4/6	2	2	0	**3.0**	**12/1/2006 14:03**
W	FPT	60	120	3/4	0/0	0/0	3/4	3	0	0	-	-
W	ROC	45	120	10/15	0/0	0/0	10/15	10	0	0	-	-
S	BOL	60	120	5/6	0/0	0/0	5/6	1	3	0	**3.0**	**12/1/2006 14:03**
S	CRE	60	120	6/2	0/0	0/0	6/2	0	5	3	**6.0**	**12/1/2006 17:03**
S	JOL	60	120	6/12	0/0	0/0	6/12	0	22	19	**13.0**	**12/2/2006 00:03**
S	STR	60	120	6/4	0/0	0/0	6/4	0	41	19	**40.0**	**12/3/2006 03:03**

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Estimated Restore Time Report "What If"

Estimated Storm Restore Time Based on SRP Overhead Crews Available
As Of 12/1/2006 11:59:10 AM

Calculate ETR | Go Back

RGN	DNC	Drive Time (Min)	Repair Time (Min)	SRP OH Crews (Curr Shift)	SRP OH Crews (Next Shift)	SRP Cntrctrs (Curr Shift)	SRP Cntrctrs (Next Shift)	SRP Other OH Help (Curr Shift)	SRP Other OH Help (Next Shift)	Open Device Otgs	Open Xfmr Otgs	Drive Time (Min)	Repair Time (Min)	Total Service Crews UNDG/SSC (Curr Shift)(2)	Total Service Crews UNDG/SSC Next Shift)(2)	Open Service Otgs
C	CN1	60	120	5	8	0	0	0	0	9	11	60	120	0	0	55
C	CS1	60	120	10	10	0	0	0	0	4	3	60	120	0	0	41
N	GLB	60	120	9	11	0	0	0	0	1	2	60	120	4	4	8
N	LIB	60	120	10	0	0	0	0	0	3	2	60	120	3	0	13
N	MAY	60	120	6	2	0	0	0	0	8	6	60	120	0	0	40
N	MPR	60	120	11	16	0	0	0	0	8	0	60	120	3	3	12
N	SKO	60	120	10	11	0	0	2	0	13	4	60	120	4	4	61
R	AUR	60	120	5	6	0	0	0	0	1	1	60	120	2	2	0
R	CRY	60	120	4	6	0	0	0	0	0	0	60	120	1	1	0
R	DIX	60	120	5	7	0	0	0	0	0	0	60	120	0	0	0
R	DKB	60	120	5	8	0	0	0	0	0	0	60	120	0	0	1
R	ELG	60	120	4	4	0	0	0	0	2	0	60	120	2	2	2
R	FPT	60	120	3	4	0	0	0	0	0	0	60	120	0	0	0
R	ROC	45	120	10	15	0	0	0	0	0	0	60	120	2	2	0
S	BOL	60	120	5	6	0	0	0	0	3	0	60	120	0	0	9
S	CRE	60	120	6	2	0	0	0	0	5	3	60	120	0	0	26

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Real Time Reliability Indices

- **Real-time reliability statistics can be calculated "on-the-fly" to keep utilities up-to-date on reliability performance.**
- **ComEd utilizes web reporting to keep employees up-to-date on its reliability performance compared to goals.**

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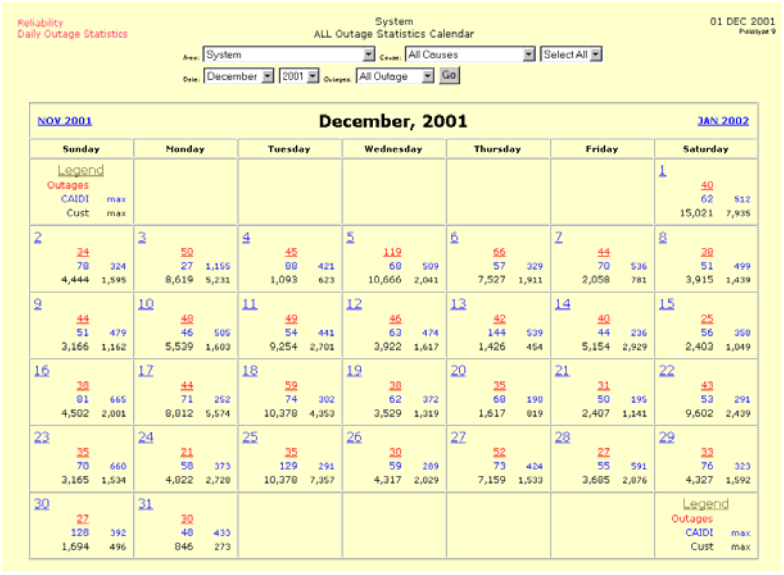
Reliability Statistics Calendar



Reliability
Daily Outage Statistics

System
ALL Outage Statistics Calendar

01 DEC 2001

Area: System | Cause: All Causes | Select All

Date: December | 2001 | Outages: All Outage | Go

NOV 2001 **December, 2001** JAN 2002

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Legend Outages CAIDI max Cust max						1 40 62 512 15,021 7,935
2 34 78 324 4,444 1,595	3 50 27 1,155 8,619 5,231	4 45 88 421 1,093 623	5 119 60 509 10,666 2,041	6 66 57 329 7,527 1,911	7 44 70 536 2,058 781	8 38 51 499 3,915 1,439
9 44 51 479 3,166 1,162	10 48 46 505 5,539 1,603	11 49 54 441 9,254 2,701	12 46 63 474 3,922 1,617	13 42 144 539 1,426 454	14 40 44 236 5,154 2,929	15 25 56 358 2,403 1,049
16 38 81 665 4,502 2,001	17 44 71 252 8,812 5,574	18 59 74 302 10,378 4,353	19 38 62 372 3,529 1,319	20 35 68 190 1,617 819	21 31 50 195 2,407 1,141	22 43 53 291 9,602 2,439
23 35 70 660 3,165 1,534	24 21 58 373 4,822 2,728	25 35 129 291 10,378 7,357	26 30 59 289 4,317 2,029	27 52 73 424 7,159 1,533	28 27 55 591 3,685 2,076	29 33 76 323 4,327 1,592
30 27 128 392 1,694 496	31 30 48 433 846 273					Legend Outages CAIDI max Cust max

Reliability Indices Scorecard

IEEE Outages Excluding Major Events and Planned Outages
Year To Date Actuals Vs. Year To Date Target
Last Updated: 11/30/2006

Year: 2006 | Type: Year To Date | Period: Nov | Go

All IEEE Outages

Organization	SAIFI				CAIDI			
	YTD Target	YTD Actual	YE Target	YE Proj	YTD Target	YTD Actual	YE Target	YE Proj
Company	0.25	0.2	0.9	0.8	70	70	80	71
Distribution	0.22	0.21	0.8	0.7	70	70	80	71
Vegetation Management	0.01	0.01	0.1	0.1	70	70	80	71
Substation	0.002	0.001	0.1	0.1	70	70	80	71
Operations	0.22	0.18	0.8	0.8	70	70	80	71

Non Storm

Organization	SAIFI				CAIDI			
	YTD Target	YTD Actual	YE Target	YE Proj	YTD Target	YTD Actual	YE Target	YE Proj
Company	0.25	0.2	0.9	0.8	70	70	80	71
Distribution	0.22	0.21	0.8	0.7	70	70	80	71
Vegetation Management	0.01	0.01	0.1	0.1	70	70	80	71
Substation	0.002	0.001	0.1	0.1	70	70	80	71
Operations	0.22	0.18	0.8	0.8	70	70	80	71

Storm

Organization	SAIFI				CAIDI			
	YTD Target	YTD Actual	YE Target	YE Proj	YTD Target	YTD Actual	YE Target	YE Proj
Company	0.25	0.2	0.9	0.8	70	70	80	71
Distribution	0.22	0.21	0.8	0.7	70	70	80	71
Vegetation Management	0.01	0.01	0.1	0.1	70	70	80	71
Substation	0.002	0.001	0.1	0.1	70	70	80	71
Operations	0.22	0.18	0.8	0.8	70	70	80	71

Data for Example Only

Conclusion

- **Utilities, external entities and customers alike are looking for the most up-date information so that informed decisions can be made.**
- **With real time outage information now available at many electric utilities, this can be accomplished, with the ultimate result being an increase in reliability performance and ultimately customer satisfaction.**