

Outage Data Submission Example for SGS Transmission Reliability Benchmarking Study

CIRCUIT ID	KV	OUT DT	RES DT	CAUSE	DELIVERY POINTS AFFECTED	DELIVERY POINT HOURS	CUSTOMERS AFFECTED	CUSTOMER HOURS	AUTO-MATIC *
9534	230	2/18/06 16:07	2/18/06 17:08	3	5	5	12500	12500	1
9534	230	2/24/06 22:12	2/24/06 22:42	4	5	2.5	12500	6250	1
7915	69	2/24/06 22:12	2/24/06 22:42	4	3	1.5	7500	3750	1
7182	69	2/24/06 22:12	2/24/06 22:42	4	2	1	5000	2500	1
7617	69	4/28/06 13:57	4/28/06 14:27	6	1	1	2500	2500	1
10097	500	7/22/06 0:03	7/22/06 2:00	3	0	0	0	0	1
8103	115	7/24/06 15:00	7/24/06 15:00	5	0	0	0	0	1
7182	69	8/21/06 7:36	8/21/06 7:36	6	1	0	2500	0	1
8103	115	8/26/06 19:04	8/26/06 19:04	5	0	0	0	0	1
7182	69	9/18/06 6:37	9/18/06 6:37	6	3	0	7500	0	1
7182	69	9/26/06 10:31	9/26/06 10:34	9	3	0	7500	0	1
10097	500	10/24/06 18:45	10/24/06 21:13	3	0	0	0	0	1
9508	230	10/24/06 23:19	10/24/06 23:19	8	0	0	0	0	1
8103	115	11/14/06 9:29	11/14/06 9:29	7	0	0	0	0	1
7182	69	12/15/06 7:26	12/15/06 7:26	6	3	0	7500	0	1
8103	115	4/12/07 15:11	4/12/07 15:11	6	0	0	0	0	1
8103	115	5/13/07 3:14	5/13/07 3:14	5	0	0	0	0	1
8103	115	5/13/07 3:15	5/13/07 3:16	5	0	0	0	0	1
7182	69	5/26/07 20:58	5/26/07 20:58	6	2	0	5000	0	1
8103	115	6/16/07 3:26	6/16/07 3:26	5	0	0	0	0	1
7182	69	6/28/07 13:51	6/28/07 13:51	6	0	0	0	0	1
8103	115	7/10/07 12:53	7/10/07 15:00	4	0	0	0	0	0
7915	69	8/6/07 16:36	8/6/07 17:06	5	2	1	5000	2500	1
7915	69	8/6/07 16:36	8/6/07 17:36	5	1	1	2500	2500	1
7915	69	8/6/07 16:42	8/6/07 17:42	5	3	3	7500	7500	1
9508	230	8/15/07 15:02	8/15/07 16:02	5	5	5	12500	12500	1
7915	69	8/15/07 15:02	8/15/07 16:02	5	3	3	7500	7500	1
7182	69	8/15/07 15:02	8/15/07 16:02	5	2	2	5000	5000	1
7915	69	9/21/07 23:47	9/22/07 1:23	5	3	6.6	7500	16500	1
7915	69	11/10/07 23:31	11/11/07 0:33	4	0	0	0	0	1
7182	69	11/23/07 0:38	11/23/07 0:38	3	1	0	2500	0	1
7182	69	12/9/07 3:58	12/9/07 4:01	3	1	0	2500	0	1
10097	500	12/13/07 15:29	12/13/07 18:54	3	0	0	0	0	1
7915	69	12/24/07 15:17	12/24/07 16:46	9	3	4.2	7500	10500	1

AUTOMATIC is the Binary Flag indicating automatic outages.

Combined outages are **highlighted in yellow**

Optional fields are in **RED** font

Voltage is included in **gray** font, which should NOT be included in outage data

Any Customer or DP outage without accompanying Customer Hours or DP Hours is assumed to be a momentary (<= 5 minutes) outage.

Circuit Definition Table Example

The circuit definition table contains one record for each valid circuit with any supporting or informational variables. This table is used to validate outage records. Additional identifiers may also be included, such as company region. Specific column or row ordering is not required. The following **Circuit Definition Table** is for the above outage data. This system used 01/01/1990 as the “date of earliest know good outage data” and uses it as the in-service date. **Optional** fields are in **RED** font in the example.

Assigning Customer and Delivery Point Totals:

- This system has a number of radial subtransmission lines (7915, 7182 and retired 7617). Also, circuit 9534 has directly tapped load. These circuits have the number of directly-connected customers and delivery points reported (Not all systems will have a direct mapping of customers or delivery points to specific circuits).
- The 230 kV line 9508 in the preceding outage data table initiated an outage which affected customers on one occasion. It has a ZERO (0) value for C/DP count, since no customers are directly connected, but has a propensity to affect customers and will be included in C/DP analyses because it appears in the outage data.
- Circuits 8103 and 10097 do not have directly connected load, are very unlikely to affect C/DPs and have missing values for C/DP totals. They have not affected customers or DPs.
- This system did not provide **annual** C/DP columns. They are assumed to be constant for all years.

Other important attributes to examine:

- One circuit (8103) was placed in service on 04/20/1999 and another circuit (7617) was retired in 2001.
- Circuit 9534 serves both Load and Bulk purposes, so it has importance values for both. Other circuits serve only one purpose.
- The **Cable** and **Exclude** columns are identified as optional; if your system has no cable and does not exclude any circuits, we assign all circuits as zero for these columns.

IMPORTANT NOTE: This example assumes a *constant* customer and delivery point count for the entire time period of C/DP data submitted. If your system has a high growth rate or has major circuit changes, it may be desirable to have a separate row for each year, with customer and delivery point count. Alternatively, you could have a separate column for each year’s customer and delivery point count.

Circuit Definition Example

Circuit ID	Circuit Name	Voltage	Length	Load Import	Bulk Import	In-Service Date	Retirement Date	Cable	Exclude	Customers	Delivery Points
7915	STONE-HOMETOWN	69	13.01	75		01/01/1990		0	0	7500	3
7182	HOMETOWN-INLAWS	69	30.71	50		01/01/1990		0	0	5000	2
7617	HOMETOWN-VACATION	69	15.82			01/01/1990	06/30/2001	0	0	2500	1
8103	XYZ P&L TIE	115	25.25		60	04/20/1999		0	1		
9508	BIG CITY-SMALL TOWN	230	28.63		65	01/01/1990		0	0	0	
9534	WHITEHOUSE-CONGRESS	230	10.71	67	57	01/01/1990		1	0	12500	5
10097	TERTIARY-QUATERNARY	500	40.20		90	01/01/1990		0	0		

9. Load Loss Data

The 2012 SGS Study will include a section for Load Loss benchmarking (also referred to as “MW Impact”) attributable to all transmission causes (lines and substations). This section differs because it includes MW Impact data for both transmission **LINES** and **SUBSTATIONS**, in contrast to other SGS benchmarks which are for LINES only. The general guidelines for load loss data submission are:

Each system in the must submit MW Impact data for years 2009, 2010 and 2011 one or more years may be submitted. The MW Impact data consists of MW Affected and MW-Time (usually reported as MW-hours).

1. MW Impact data for Line outages could be included with the regular outage data submission by adding 2 additional columns, or as a separate table with substation data (see example below).
2. MW Impact data for substations affecting delivery points (i.e., “within the fence failures” attributable to transmission which affect Load at a DP) should be submitted in an identical format as the line outages, as a separate table from the line outages. Substation data may be submitted for each substation within a DP outage, or as a single record representing all substation-caused DP outages aggregating all MW and MW Minutes for the entire outage event.
3. MW Affected and MW-Minutes may be submitted as actual metered values at the time of the interruption or as estimates.
 - If estimates are supplied, we encourage use of Average MW for the DP interrupted MW.
 - In the past, two system supplied estimated load loss. The estimated data consisted of Peak MW load values contained in the circuit definitions. If you supply the peak load for the DP, then you **must** also submit a table of hourly system MW loads and we will scale the peak DP value by the proportion of hourly system load divided by the annual mean.
 - You may also estimate MW Impact based on customer data (e.g., KW per customer), but you must adjust for single- or few-customer DPs (e.g., munis, industrials, etc).

DP Outage Data Submission Example for the SGS Load Loss Pilot Benchmarking Study

CIRCUIT ID	KV	OUT DT	RES DT	CAUSE*	DELIVERY POINTS AFFECTED	DELIVERY POINT HOURS	MW AFFECTED	MW HOURS	AUTO-MATIC *
9534	230	2/18/09 16:07	2/18/09 17:08	3	5	5	15.63	15.63	1
9534	230	2/24/09 22:12	2/24/09 22:42	4	5	2.5	15.63	7.81	1
7915	69	2/24/09 22:12	2/24/09 22:42	4	3	1.5	9.38	4.69	1
7182	69	2/24/09 22:12	2/24/09 22:42	4	2	1	6.25	3.13	1
7617	69	4/28/09 13:57	4/28/09 14:27	6	1	1	3.13	3.13	1
7182	69	8/21/09 7:36	8/21/09 7:36	6	1	0	3.13		1
7182	69	9/18/09 6:37	9/18/09 6:37	6	3	0	9.38		1
7182	69	9/26/09 10:31	9/26/09 10:34	9	3	0	9.38		1
7182	69	12/15/09 7:26	12/15/09 7:26	6	3	0	9.38		1
STATION 1		2/12/09 15:11	2/12/09 16:31		3	4.5	12.00	54.00	
STATION 2		5/26/09 20:58	5/26/09 20:58		2	0	13.50		
STATION 3		10/16/09 3:26	10/16/09 3:41		4	1	20.00	20.00	

* Outage Cause data is not used in the Load Loss benchmarks.