

# **GADS Reporting**

## The Big Picture and Business Uses

Used for reliability studies such as Polar Vortex

- NERC asked for additional info (poor info provided by industry)
- Data had descriptions that made freeze event easy to identify
- Our commitment to good cause codes and descriptions made this possible

## Used for analysis in State of Reliability Report

- Equivalent Forced Outage Rate (EFOR) by region
- EFOR by generation type
- Top causes of forced outages
  - Horrible industry data

# Top 10 Cause Codes for NERC's State of Reliability Report

Top 10 Cause Codes on Annual Basis (MWh)				
Rank	2012	2013	2014	2015
1	Waterwall (Furnace wall)	Rotor - General	Waterwall (Furnace wall)	Main Transformer
2	Rotor - General	Main Transformer	Emergency Generator Trip Devices	Stator Windings, Bushings, and Terminals
3	Transmission System Problems other than Catastrophes	Stator Windings, Bushings, and Terminals	Flood	Generator Vibration
4	Main Transformer	Other Miscellaneous Generator Problems	Main Transformer	Waterwall (Furnace wall)
5	Other Boiler Instrumentation and Control Problems	Stator - General	Lack of Fuel (interruptible supply of fuel)	Stator Core Iron
6	Second Superheater	Regulatory Proceedings and Hearings	Other Low Pressure Turbine Problems	Major Turbine Overhaul (720 Hrs Or Longer)
7	Generator Output Breaker	Rotor Windings	AC Conductors and Buses	Other Exciter Problems
8	Hurricane	Flood	Stator Windings, Bushings, and Terminals	Other Switchyard or High Voltage System Problems
9	Regulatory Proceedings and Hearings	Waterwall (Furnace wall)	Major Turbine Overhaul (720 Hrs Or Longer)	Other High Pressure Turbine Problems
10	First Reheater	Air Supply Duct Expansion Joints	Miscellaneous Regulatory	AC Protection Devices

# Results of Cause Code Analysis for NERC's State of Reliability Report

Valid Cause Codes and Descriptions matter for detailed analysis

Row Labels	Sum of MWHrs Lost	Count of MWHrs Lost
(blank)	8,645,672.08	19
Automatic SCRAM due to a ground fault on a [#] KV Insulator	59,012.94	1
[#] transformer S/W connector has hi temp;needs repair.DC lube oil pressure s/w missing	56,448.00	2

Row Labels	Sum of MWHrs Lost	Count of CAUSECODE
Tube leak	3,017,517.29	62
(blank)	1,384,192.10	58
Tube Leak.	1,000,696.72	5
Waterwall Tube	772,194.26	17
Waterwall tube leak	393,157.35	10

Row Labels	Sum of MWHrs Lost	Count of MWHrs Lost
External Transm	3,965,969.70	3
main GSU transf	3,025,914.50	8
GSU transformer	2,796,924.20	4
[#]	2,260,353.60	4
GSU bushing failure caused unit trip.	2,195,417.60	4
GSU [#] MAIN TRANSFORMER CATASTROPHIC	2,163,248.00	8
(blank)	1,801,651.24	31

## Used for benchmarking

- Special studies to compare peer utilities
- Compare specific equipment between plants or vendors

Used to identify Root Cause Analysis (RCA) events

- Corrective Action Report (CAR) written for most Forced Outage (FO) and Unplanned (Forced) Derating – Immediate (D1) events

Used in monthly operating reports

Used in Inner Company Interchange Contract (IIC) availability capacity payments

Used for pay and plant goals

- Equivalent Forced Outage Rate (EFOR) – pay and plant
- Equivalent Unplanned Outage Factor (EUOF or EUUF) – plant

Used to benchmark a specific company vs. industry

### Used as historian for unit health

- Boiler tube failure outages
- Chemistry peer reviews (time between boiler chemical cleanings)
- Data for insurance audits