Energy for generations

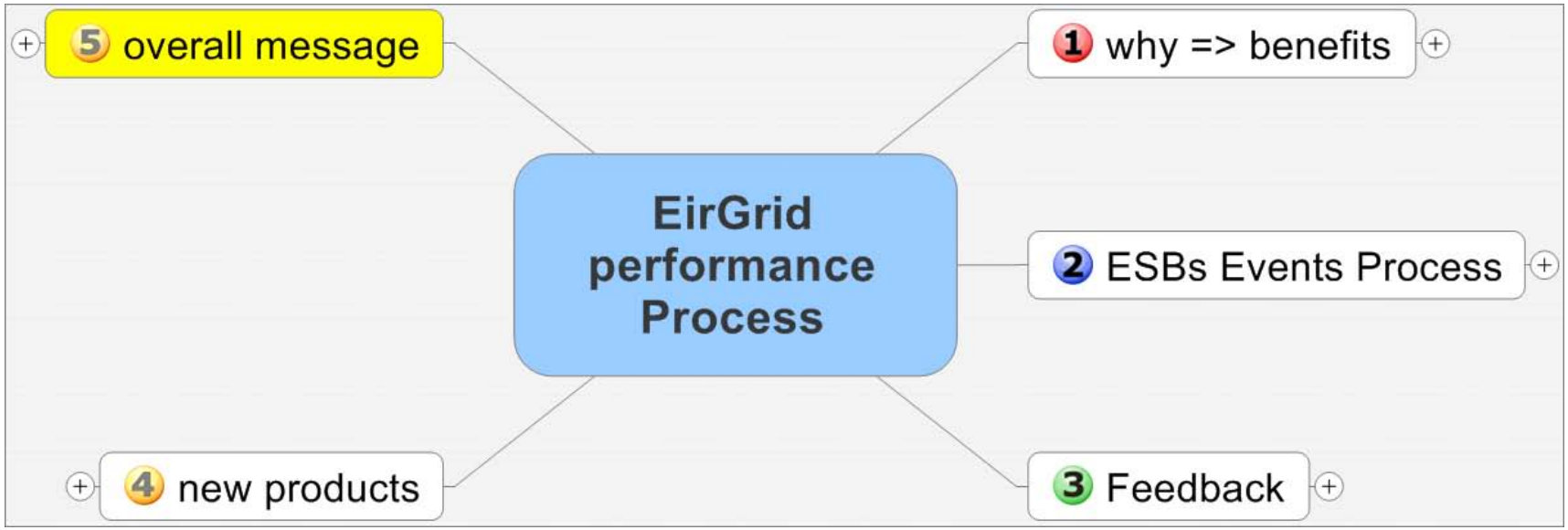
Performance Monitoring

ESB Generation & Wholesale Markets Perspective

Ruairí Costello

6th June & 11th June 2013

Summary


5 overall message
1 why => benefits
EirGrid performance Process
2 ESBs Events Process
4 new products
3 Feedback

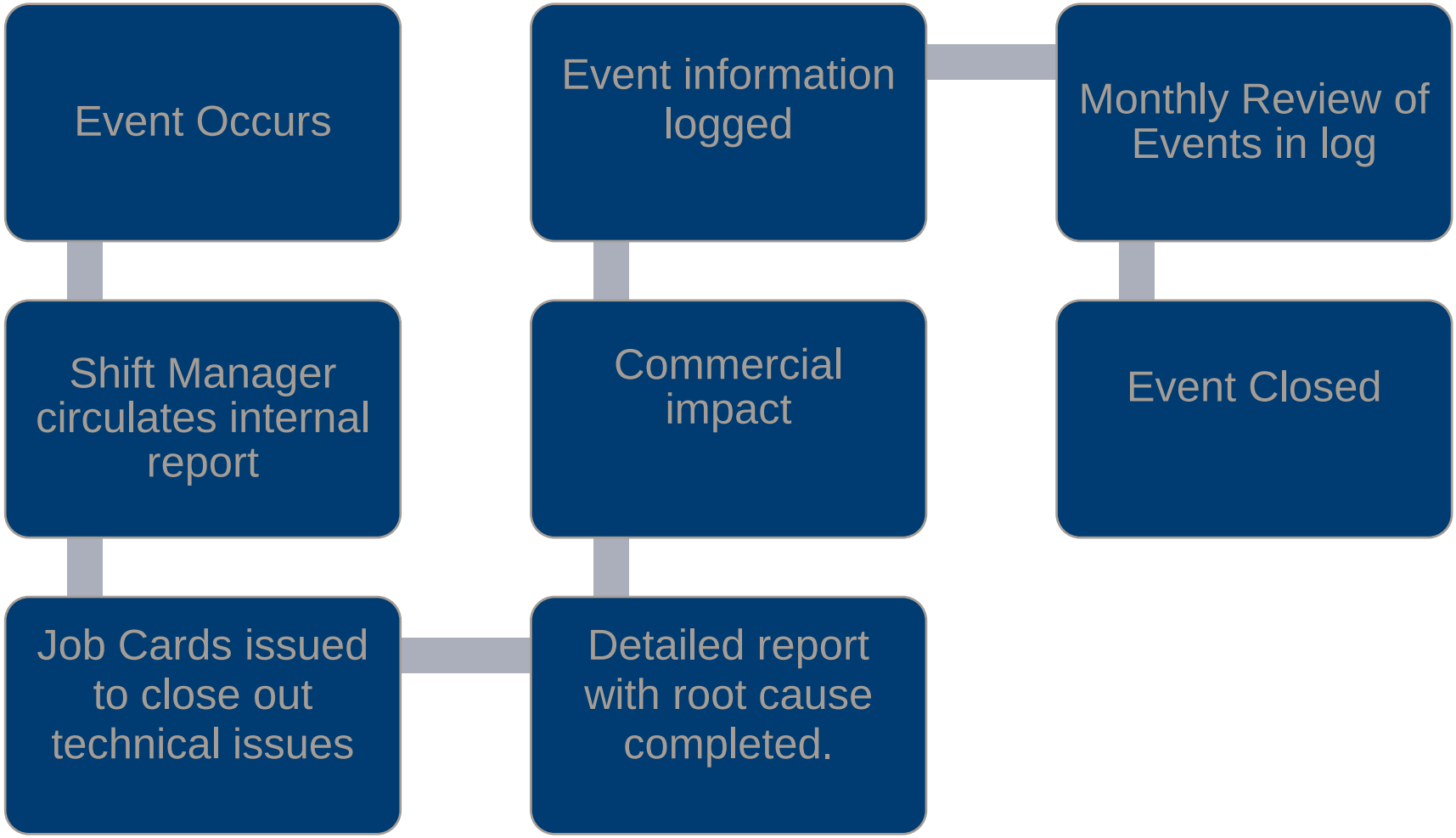
WHY

- TSO entitled to monitor generators
- Maintain a standard of performance

BENEFICIAL

- TSO & ESB
- Open communication
- Allows ESB to see TSO priorities
- Platform to discuss perceived shortfalls
- Confidence building
- Maintain clean Operations Certificates
- Maintain Ancillary Services Contracts

Our Generator Events Management Process



Our Reports

.Generating Station	Moneypoint	Generating Unit	Unit 3

Shift Managers Summary Trip Report

Date / Time of Trip:	14:16:56 on 29 Jan 2010
Estimated Date/Time of Resynchronise:	22:00 on 29 Jan 2010
Generated Load (stable) immediately prior to incident causing trip	284 MW
Station Trip Record Number:	

Brief Summary Of Cause Of Trip Following Initial Investigation

On secondary air B side transmitter plugged out to blow lines. This caused a logic fault which halved the air flow measurement. This ramped back the mills. Boiler became unstable and tripped turbine on drum high level.

Significant Plant Operational Anomalies During Trip Cycle Incident, (if any)

HP-bypasses failed to operate due to spray-water delayed opening.

Immediate Corrective Action Taken To Prevent Reoccurrence Of Trip /Rectification Of Fault

All secondary air lines when being blow put mills and air on manual. Logic to be amended when unit off load.

	Issues arising from Incident:	J/R Issued	Actions:
1	Sec Air evaluation should not have caused this incident. Review logic	10-245	Sec Air evaluation logic to be reviewed.
2	HP Bypass Spray Water Control is causing problems	10-246	Review HP Bypass Spray Water Cont.
3			
4			

Report Completed by	John Smith

This Report should be completed within 14 days of date of trip
Please forward to Ops Manager / Plant Manager & mailto:gPG-PG-Trip

.Generating Station		Generating Unit	

Detailed Trip Investigation Report

Date / Time of Trip:	
Date/Time of Declaration of Availability for Load after Trip:	
Generated Load (stable) immediately prior to incident causing trip	
Station Trip Record Number:	

Tick Box For Most Appropriate Tripping Reason ✓

Air/ gas	Boiler	Feedwater	C&I	CW	Electrical	Fuel / Ash Plant	Hydro Infra-structure	Staff
Testing	Turbine	Water Treatment	Outage Over Run	Failed or Late Start	Trips or Fast Wind Down	Fuel Quality Fuel Shortage	Other	

Brief Description Of Trip Following Investigation

Description Of Unit Operating Conditions Before Trip

Sequence of Events leading up to Trip and Immediately Afterwards

Our Station Event Log

Energy for generations

Date and Time of Incident	Month	Unit	Type	Sub Type	Summary Trip Report	Detailed Trip Report	Description	Issue arising	Actions	Comments	JRM	Status	Status Date	
01/01/2012 00:00	Jan	AD2	Sort Ascending Sort Descending (All) (Top 10...) (Custom...) FL - Late Sync FR - Frequency E FT - Unit Trip IN - Incident Othe MW Shortfall Six Sig Analysis				It has been observed that the HP drum level goes erratic immediately after GT purge has completed and just prior to ignition on hot starts. The HP drum level must be maintained within +/-50mm of its setpoint and on many occasions this requires manual intervention from the operator to ensure the HP drum level is kept within		1. Note sent to Alstom Warranty 09/03/2012: Can you please look at the possibility of increasing the allowable limits for this period during a hot start, and indeed explain why such a drum fluctuation occurs at this particular time. S Walshe asked on 5.7.12 if AP have responded.	1. Open Closed May 2013 as not an issue since first logged.		Closed	05/07/2012	2
01/01/2012 00:00	Jan	AD2	IN - Incident Other				The LP OTC level must be within the range of 1.2 to 1.4m to give a start release. Recently this has lead to issues whereby the level is difficult to maintain within these limits. One potential issue is that the blowdown valve 21LAB91AA201 is sparing (this had been an issue in the past), and is currently being looked into. Another angle which might reduce our exposure to such level fluctuations is to increase	The LP OTC level must be within the range of 1.2 to 1.4m to give a start release. Recently this has lead to issues whereby the level is difficult to maintain within these limits. One potential issue is that the blowdown valve 21LAB91AA201 is sparing (this had been an issue in the past), and is currently being looked into. Another angle which might reduce our exposure to	1. Note sent to Alstom Warranty 09/03/2012: Can you please advise whether increasing acceptable starting range range is possible and if so what new values could be used. AP will not change range. Replacement drain valves will help alleviate problem 5.7.12 2. Inspect, adjust and fine tune blowdown valve 21LAB91AA201. 3. Consider upgrading LP & HP OTC Blowdown valves to better control type valves at next outage opportunity.			Closed	05/07/2012	2
07/01/2012 17:24	Jan	AD1	MW Shortfall				Incremental declarations due to HP Stress.		Get JC to pull together curves for HP and IP stress on starts where we intervened and starts which were under full auto control and compare			Open		2
14/01/2012 11:54	Jan	AD1	MW Shortfall				Incremental declarations due to HP Stress.		Ongoing discussion with ABB	As per 07/01/2012. Closed here		Closed		2
14/01/2012 16:30	Jan	CT11	FL - Late Sync				Cranking motor fault delayed start from 16:30 to 16:51		Issue under review by EI department	Closed here on basis that work conducted on site appears to have resolved the issue i.e. no recent reoccurrence		Closed		2
15/01/2012 00:00	Jan	AD2	FL - Late Sync				GT Trip on start-up due to HPT TAT strike.	GT Trip on start-up due to HPT TAT strike.	1. PSC response points towards an instrumentation failure rather than actual hot spot. Recommend check to loop and monitor to on load! 2. 18/01/2012. Query response from PSC - can we infer instrumentation issue from TAT 2 spread. We should disconnect to prevent spurious trip.! 3. 02/02/2012 - PSC confirm can infer TAT1	1. Open - Trend to since event for unusual activity - Closed (TC disconnected)! 2. Closed by SI 3. Closed		Closed	05/02/2012	2

Late Sync, Trips, MW Shortfall, Frequency Events, Safety, etc

Some ESB Concerns

Time Consuming	• Large Portfolio • Monthly 2 hour meeting unable to discuss all the issues • Needs to be better streamlined
Shortfalls in 2 way process	•ESB concerns must be followed up eg - Late declaration entries, TOD violations, testing. •EDIL upgrades not forthcoming to minimise the above
Complex System Events	• More complex events and the generators response not being recognised. Eg Ramping down when event occurs, double frequency events.

Improvements

We already have a process and **commercial penalties** exist to ensure we follow up on events so:

- Recognise High Penalties
- Make more efficient for both
- Prioritise
- Report once, Explain once
- Report trends
- Ensure 2 way process

Things that work well

Centralised Management

Trending in Quarterly Report

Tracker Log by Priority

New Products

1. New products will result in new performance monitoring.
2. Poorly defined products will lead to difficulties in performance measuring and risks to income.
3. EirGrid IT tools must be sufficiently accurate. Eg time resolution.
4. Assessment method should be published
5. Worked examples using historical real life events should be published.

Overall Message

1. ESB benefits from performance monitoring
2. Any performance related issues should be emailed to performance1@esb.ie
3. Penalties already exist to encourage good performance
4. ESB has its own process to close out events
5. It is time consuming for ESB to report back on every event
6. Avoid repeatedly reporting on known issues with plant e.g. Poolbeg reserve MW levels
7. The quarterly report has very good content and it packaged very well. It is very easy to go to a station with this.