AUDITING AND BENCHMARKING
CS Energy at a glance

- Employs more than 400 people
- Diverse and unique portfolio mix
  - Coal-fired power stations
    - Kogan Creek
    - Callide
  - Pumped storage hydro
    - Wivenhoe
  - Trading rights
    - Gladstone Power Station
- 2,475 MW owned
- 2,880 MW operate and maintain
- 4,035 MW available to trade
- Coal assets and resources
  - Kogan Mine
  - Glen Wilga and Haystack Road
Our location

1. Callide Power Station
   near Biloela in Central Queensland
2. Kogan Creek Power Station
   near Chinchilla in South West Queensland
3. Wivenhoe Power Station
   near Esk in South East Queensland
• Commissioned in 2007
• 750 MW, black coal-fired (49 employees)
• Largest single unit generator in the NEM
• Single supercritical once-through boiler
• Low environmental emissions
• Dry-cooled resulting in 90 per cent less water consumption
• Coal supplied from CS Energy-owned Kogan Mine

• Located near Biloela in Central Queensland
• 1,630 MW, black coal-fired (235 employees)
• Callide A (120 MW), built in 1965 (the site of the Callide Oxyfuel Project – a world-leading low emissions coal demonstration project)
• Callide B (700 MW), commissioned 1988
• Callide C (810 MW), commissioned 2001 (50% JV with InterGen)
• Coal supplied from adjacent Anglo Callide Coal Mine

• Located near Fernvale, South East Queensland
• 500 MW for 10 hours (13 employees)
• Pumped storage hydroelectric
• Commissioned in 1984
• Comprises two 250 MW units that are the largest hydro machines in Australia
• Flexible and responsive – the station can go from 0 MW idling to generating 500 MW in less than 14 seconds
Basic Processes

Establish Business Objectives

Set KPI’s

Audit Performance

Benchmark Performance

Continuous Improvement
What is BENCHMARKING

“Benchmarking is a continuous process for evaluating the practices and metrics of a maintenance organization, comparing to those companies recognized as leaders, aiming to identify and incorporate the improvement opportunities regarding cost reduction and production performance.”

- Benchmarks are like the warning lights on the dashboard of your car
- When a light goes on, you need to look under the bonnet to see what the problem is.
- Benchmarks might identify an area that needs attention, but they won't tell you what needs to be done or how to do it.

https://www.youtube.com/watch?v=n_1uUUI63Q
• National Generators Forum (Electrical Benchmarking Forum)
• International Generation Benchmarking Consortium
• Provecta – Control System Benchmarking
• ESAA Generation performance benchmarking
• PAS – Alarm Performance Benchmarking
Types of BENCHMARKING

Benchmarking can take the form of several different types:

*Internal benchmarking* – a comparison of internal operations such as one site (or project team) against another within the same company.

*Competitive benchmarking* – a comparison against a specific competitor for the product, service or function of interest.

*Generic benchmarking* – a comparison of business functions or processes that are the same, regardless of industry or country.
Asset Management BENCHMARKING

• Audit – PAS 55
• Benchmarking output results - Internal
PAS 55 Assessment

4.1 General Requirements
4.2 AM Policy
4.3.1 AM Strategy
4.3.2 AM Objectives
4.3.3 AM Plans
4.3.4 Contingency Planning

4.4.1 Structure, Authority & Responsibilities
4.4.2 Outsourcing of AM Activities
4.4.3 Training, Awareness & Competence
4.4.4 Communication, Participation & Consultation
4.4.5 AM System Documentation
4.4.6 Information Management
4.4.7 Risk Management
4.4.8 Legal & Other Requirements
4.4.9 Management of Change

4.5.1 Life Cycle Activities
4.5.2 Tools, Facilities & Equipment

4.6.1 Performance & Condition Monitoring
4.6.2 Incident, Failure Investigation
4.6.3 Evaluation of Compliance
4.6.4 Audit
4.6.5 Improvement Actions
4.6.6 Records

4.7 Management Review

FOR PRESENTATION PURPOSES ONLY
Maintenance Management BENCHMARKING

- Audit – Work Management
- Benchmarking output results - Internal
OVERVIEW OF WORK MANAGEMENT

PROCEDURES, PROCESSES & SYSTEMS

WORK MANAGEMENT STANDARDS

PERFORMANCE MEASUREMENT

CORE POLICIES AND DEFINITIONS

ORGANISATIONAL DESIGN
What BENCHMARKING is NOT

- Benchmarking is not Strategy
- Benchmarking does not guarantee performance
The Benefits of BENCHMARKING

Benefits include:

- Better performance in meeting customer needs & requirements.
- Establishing effective business goals and objectives.
- Measuring true productivity.
- Becoming competitive
- Identifying & implementing best practice in business processes
What does successful BENCHMARKING require?

In practice, the main requirements for success are:

• A strong and active commitment from senior management to lead and implement the benchmarking process

• A willingness to change and adapt based on the benchmarking findings.

• A realisation that the competition is constantly changing.

• An openness to new ideas, creativity and innovativeness in their application to existing processes.

• A continuous benchmarking effort.

• A willingness to share information with benchmarking partners (e.g. other organisations)
What are the side effects to successful BENCHMARKING?

Benchmarking has some inadequacies which must be clearly recognised and understood before continuing the exercise:

- Don't try and benchmark too many things to begin with. Select two or three key areas, and then gradually add others over time.
- Don't waste time benchmarking things that are just "nice to know". Every benchmark should aim to improve performance in an area that contributes to profits or customer satisfaction.
- Be precise in defining what is to be measured. A lack of clarity can lead to confusing an inappropriate benchmarks.
- Test the benchmarks internally before consulting with outside companies.
- Remember that your organisation's priorities may change with time, and so your benchmarks should be regularly reviewed (and changed if necessary) to reflect this.
5 steps to successful BENCHMARKING

The five key steps in the benchmarking process are:

**Plan:** Clearly establish what needs to be improved – make sure it is important to you and your customers – and determine the data collection methodology to be used (including any KPIs).

**Analysis:** Gather the data and determine the current performance gap - against a competitor, the industry or internally – and identify the reasons for the difference.

**Action:** Develop and implement improvement plans & performance targets.

**Review:** Monitor performance against the performance targets.

**Repeat:** Repeat the whole process – benchmarking needs to become a habit if you are serious about improving your performance.
Thank you for LISTENING

QUESTIONS