PowerNet

Case Study
Control Framework Approach to Managing Critical Risks

Presented at EEA Health and Safety Workshop 2019
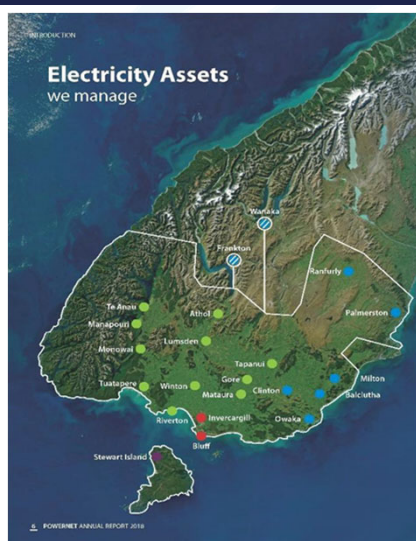30 – 31 October in Wellington
by Graeme Webby and Michael Boyle

Safe | Efficient | Reliable
Power to Communities

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PowerNet Fact Sheet

Electricity Assets
we manage

- Jointly owned integrated electricity network management company - formed in 1994

- Invercargill based with regional offices

- Directly employs > 260 people

- Supplies electricity to 70,000 customers

- Manages significant network assets
  - 14,095kms of lines & cables
  - 160,000 poles
  - 73 Zone substations
  - 15,917 transformers

2

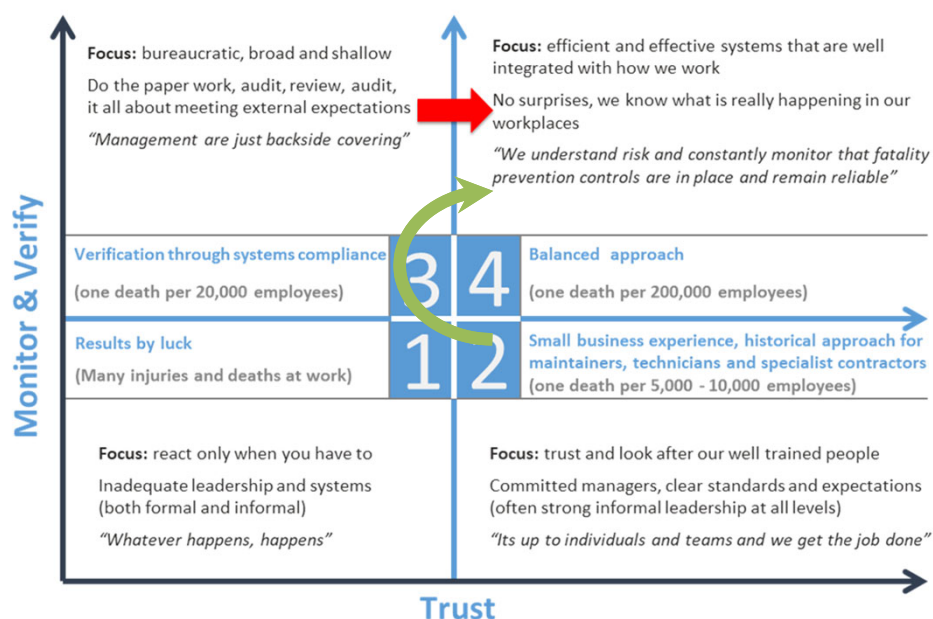## External Review 2016 – what is possible?

Key Recommendation:

"When delivering these outcomes, PowerNet should base its design thinking for all improvement steps around improving the reliability and practical implementation of known operational controls."

Use the Control Framework Approach!

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The Balance Opportunity – Trust and Verify Quadrant Model

Monitor & Verify

Focus: bureaucratic, broad and shallow
Do the paper work, audit, review, audit, it all about meeting external expectations
"Management are just backside covering"

Focus: efficient and effective systems that are well integrated with how we work
No surprises, we know what is really happening in our workplaces
"We understand risk and constantly monitor that fatality prevention controls are in place and remain reliable"

Verification through systems compliance
(one death per 20,000 employees)

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Balanced approach
(one death per 200,000 employees)

Results by luck
(Many injuries and deaths at work)

1

2

Small business experience, historical approach for maintainers, technicians and specialist contractors
(one death per 5,000 - 10,000 employees)

Focus: react only when you have to
Inadequate leadership and systems (both formal and informal)
"Whatever happens, happens"

Focus: trust and look after our well trained people
Committed managers, clear standards and expectations (often strong informal leadership at all levels)
"Its up to individuals and teams and we get the job done"

Trust

Opportunities:

Quadrant 3: organisations can use new control thinking to break out of the bureaucracy and move to Q4 operations.

Quadrant 2: organisations can design and implement practical business processes and move directly to Q4 operation, avoiding the heavy investment and erosion of trust of Q3.
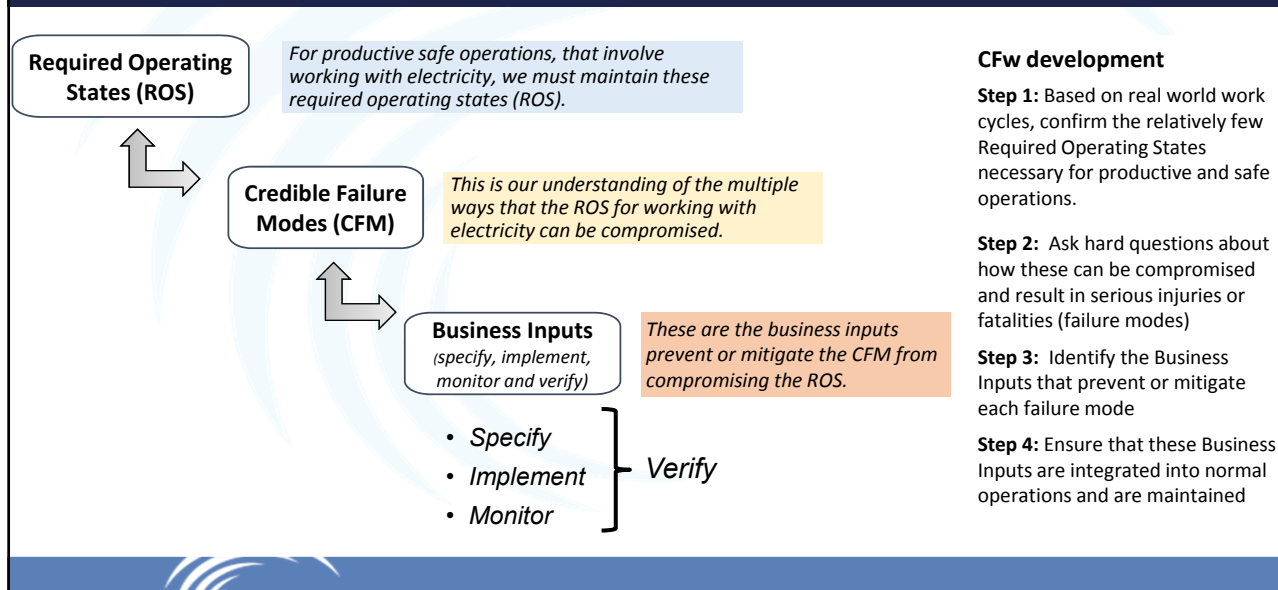
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The benefits
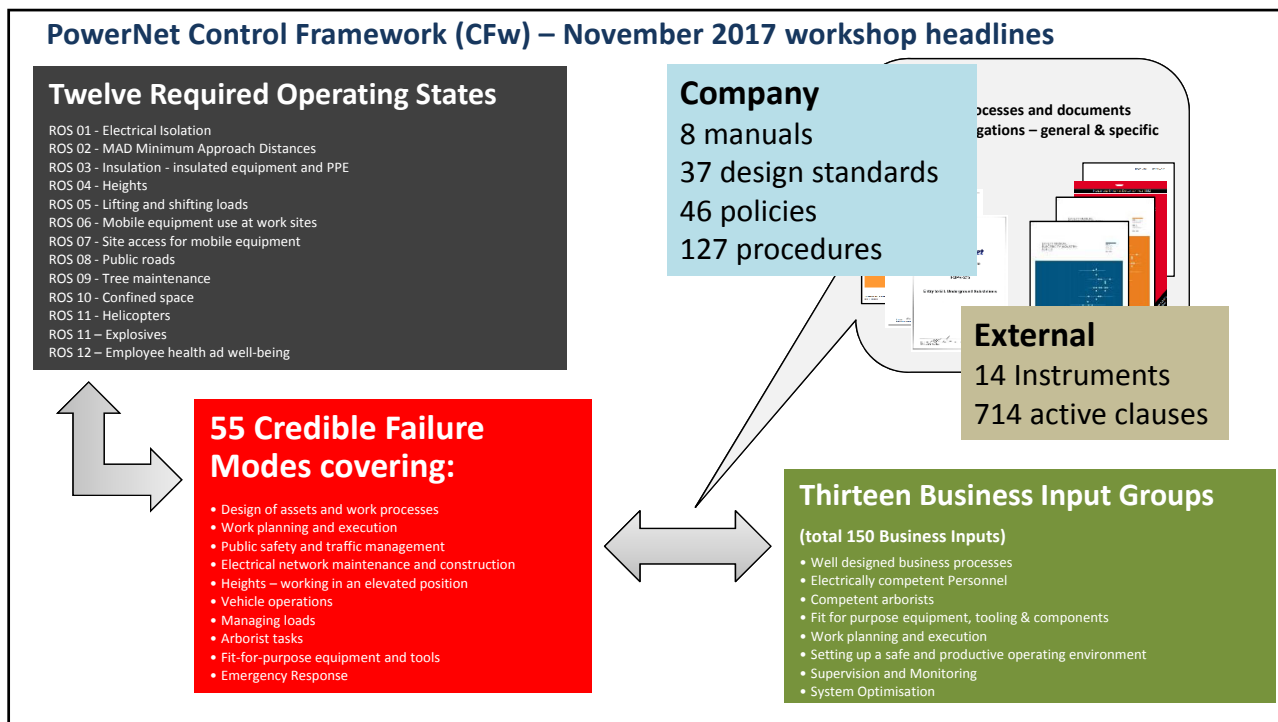
The Control Framework (CFw) Approach

- A pivot and a refocus based on answering:
  'What needs to be in place for our work to go right?'
- Builds from and incorporates existing know how and real-world experience
- Aligns with approaches being developed by the regulator
- Confirms required operating states from a business perspective
  'safe and productive outcomes are delivered when …'
- Is based on ongoing workgroup input, validation and improvement
- Asks and answers key questions in a style that works for end users
  - Where and how is this requirement specified?
  - How is it to be implemented?
  - How will its effectiveness be monitored?
- Logical and supported decision making on changing systems and ceasing (or not starting) non value- adding activities
  - Systematically identifies and sorts between what is required and what is clutter
  - Allows for the active mapping of business inputs to compliance outcomes

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The Control Framework (CFw) Approach

Required Operating States (ROS)

For productive safe operations, that involve working with electricity, we must maintain these required operating states (ROS).

Credible Failure Modes (CFM)

This is our understanding of the multiple ways that the ROS for working with electricity can be compromised.

Business Inputs
(specify, implement, monitor and verify)

These are the business inputs prevent or mitigate the CFM from compromising the ROS.

- *Specify*
- *Implement*   } *Verify*
- *Monitor*

CFw development

Step 1: Based on real world work cycles, confirm the relatively few Required Operating States necessary for productive and safe operations.

Step 2: Ask hard questions about how these can be compromised and result in serious injuries or fatalities (failure modes)

Step 3: Identify the Business Inputs that prevent or mitigate each failure mode

Step 4: Ensure that these Business Inputs are integrated into normal operations and are maintained

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PowerNet Control Framework (CFw) – November 2017 workshop headlines

Twelve Required Operating States

ROS 01 - Electrical Isolation
ROS 02 - MAD Minimum Approach Distances
ROS 03 - Insulation - insulated equipment and PPE
ROS 04 - Heights
ROS 05 - Lifting and shifting loads
ROS 06 - Mobile equipment use at work sites
ROS 07 - Site access for mobile equipment
ROS 08 - Public roads
ROS 09 - Tree maintenance
ROS 10 - Confined space
ROS 11 - Helicopters
ROS 11 – Explosives
ROS 12 – Employee health ad well-being

Company
8 manuals
37 design standards
46 policies
127 procedures

rocesses and documents
gations – general & specific

External
14 Instruments
714 active clauses

55 Credible Failure Modes covering:

• Design of assets and work processes
• Work planning and execution
• Public safety and traffic management
• Electrical network maintenance and construction
• Heights – working in an elevated position
• Vehicle operations
• Managing loads
• Arborist tasks
• Fit-for-purpose equipment and tools
• Emergency Response

Thirteen Business Input Groups

(total 150 Business Inputs)

• Well designed business processes
• Electrically competent Personnel
• Competent arborists
• Fit for purpose equipment, tooling & components
• Work planning and execution
• Setting up a safe and productive operating environment
• Supervision and Monitoring
• System Optimisation

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Control Framework: workforce validation – September 2018

Validation workshop objectives

**Introduce control framework approach to broader PowerNet workforce**
- *Moving from train and trust*
- *New control thinking – illustrated by real examples*

Validate November 2017 workshop content and approach
- *Sessions for technicians (Invercargill), line mechanics and arborists*
- *Logic check*
- *Control sheet reviews for content and logic gaps*

Feedback and what next?
- *Will this approach add value, is the thinking and approach valid?*
- *Day in the life discussion to prepare for pilot*
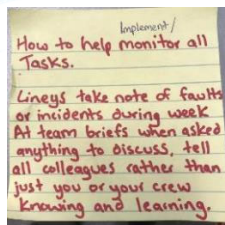
- Eight workshops @ 120 personnel
- Many improvements & updates
- Confirmed next steps for workflow integration - especially for planning

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October 2019 - Live Demonstration

So what?

And how does this help me with STKM?

(Link out now!)

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A final word on compliance

Source	No of Expectations
Electricity Act 1992	14
Electricity Amendment Act 2001 and 2006	6
Electricity Industry Act 2010	15
ESR 2010 Regs	77
FSEB Regs	8
HSW Act	46
HSW Regs	47
IoD Governance	13
NZS7901:2014	34
SM-EI Manuals	358
Tree Maintenance COP	96
Total	**714**

Meeting external expectations efficiently…

…compliance for free (almost)

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