OUTAGE PLANNING

1 MAY 2019

JOHN CLARKE, GM OPERATIONS

KATHERINE MOORE, OPERATIONS PLANNING MANAGER

AGENDA

1. A note about roles
2. How outage planning works
3. How to get outage information
4. HVDC outage issues (Nov 2018) and improvements
5. Outage Planning Policy (if interested)

1. ROLES

Asset owners (including GO)

- Notify
- Avoid security concerns and coordinate with others
- Make changes if asked, where possible
- Maintain full discretion around their outages
- **Grid Owner only**: consider net-benefit (and can be called on it but in line with process)

System Operator

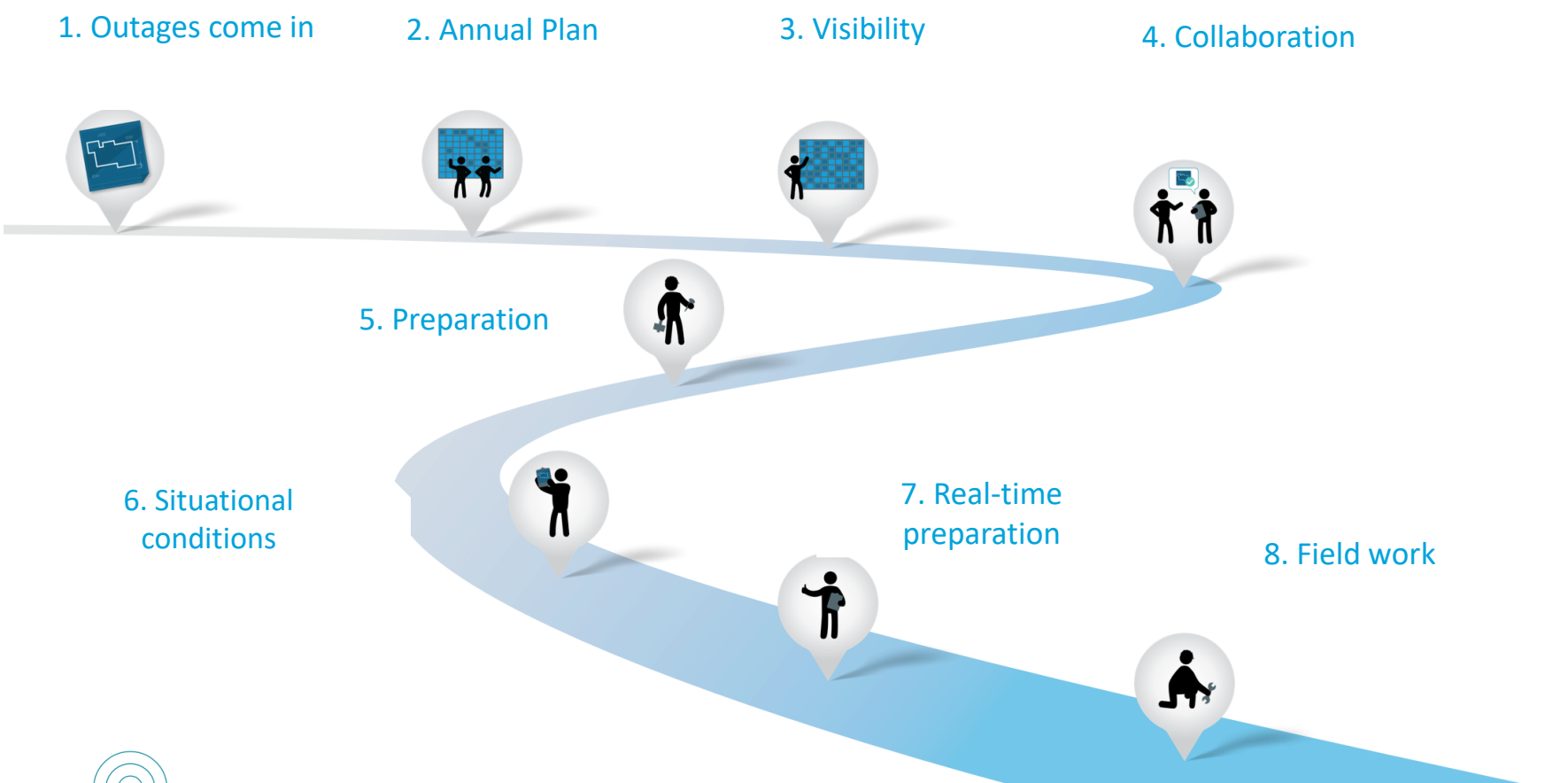
- Assess all outages
- Identify problems and suggest mitigation strategies
- Reasonable and Prudent, but in an economic manner
- Identify impacts should those concerns be there in real-time

HOW OUTAGE PLANNING WORKS

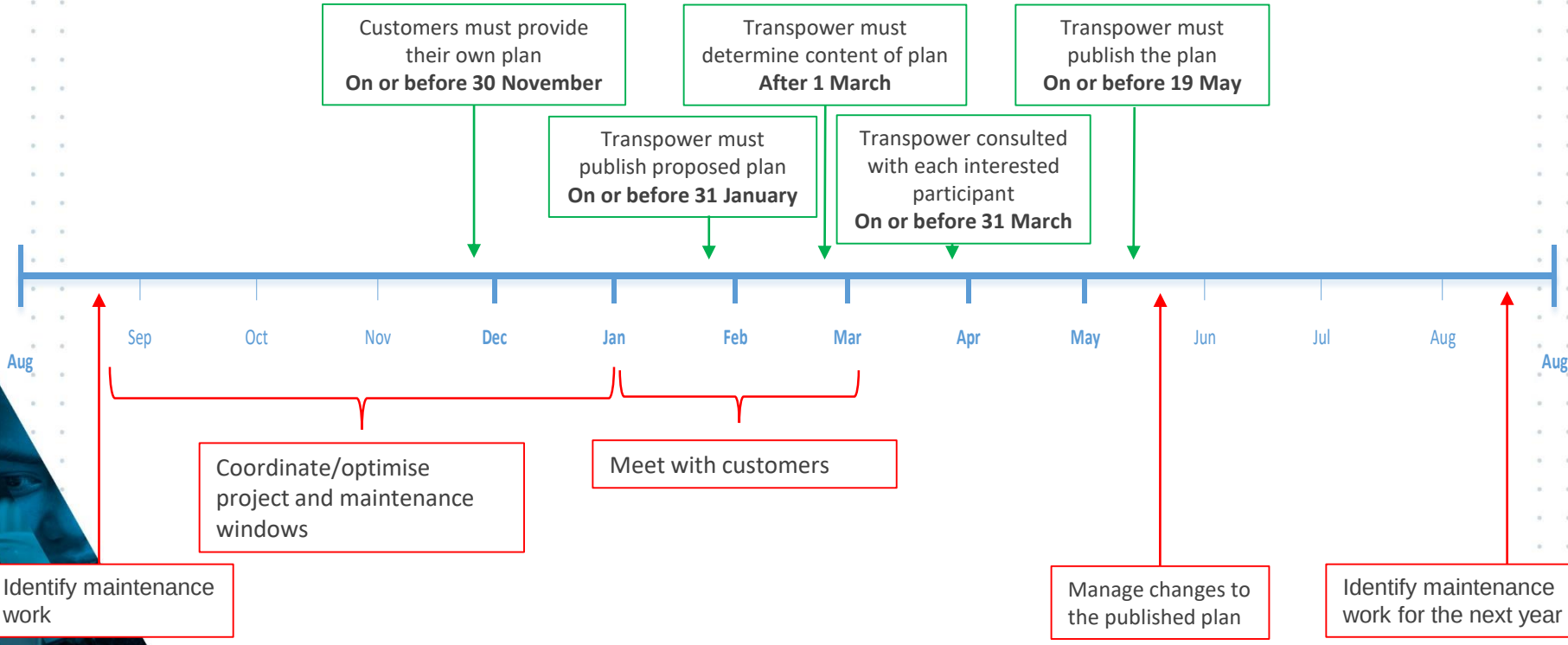
HTTPS://VIMEO.COM/314357836/F205C7E029

What happens at each step of the process?

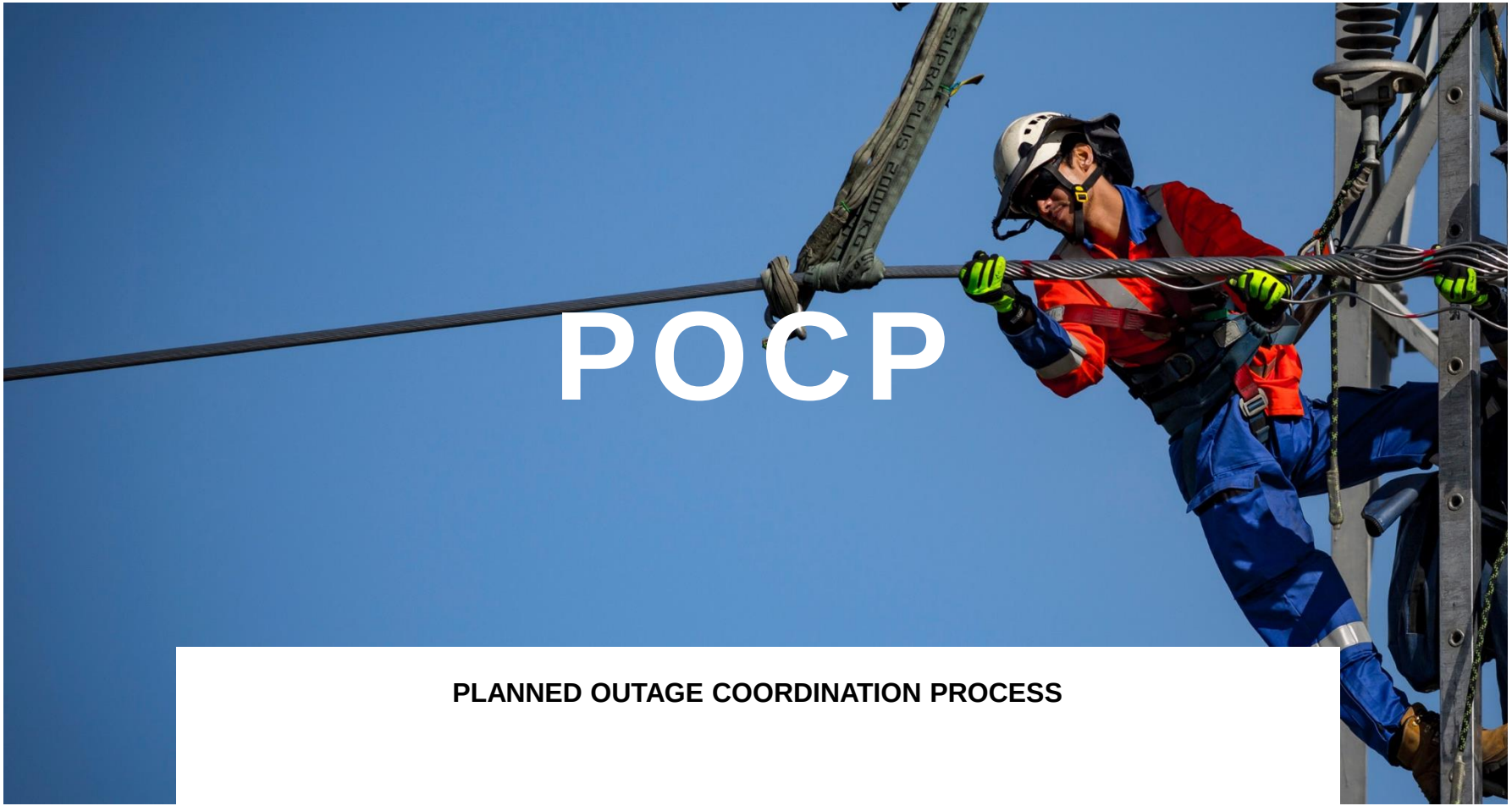
https://vimeo.com/314357836/f205c7e029



DEVELOPMENT OF THE ANNUAL OUTAGE PLAN




HOW TO GET
INFORMATION

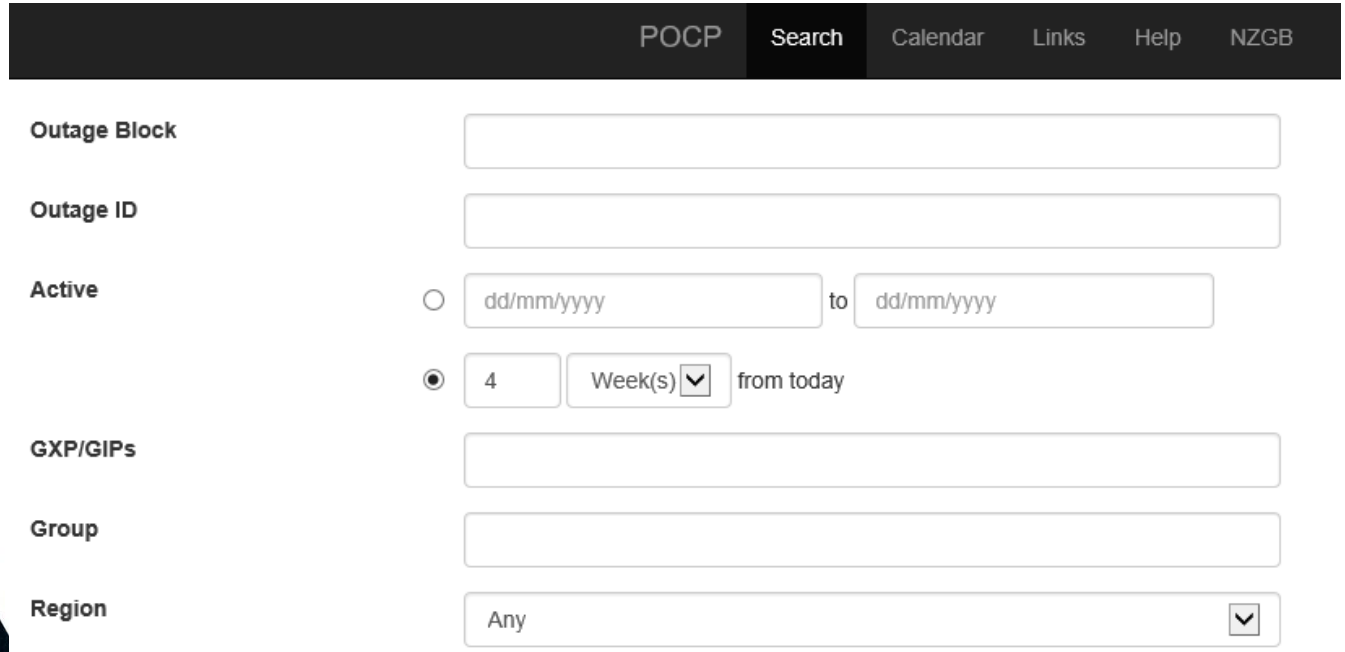


POCP

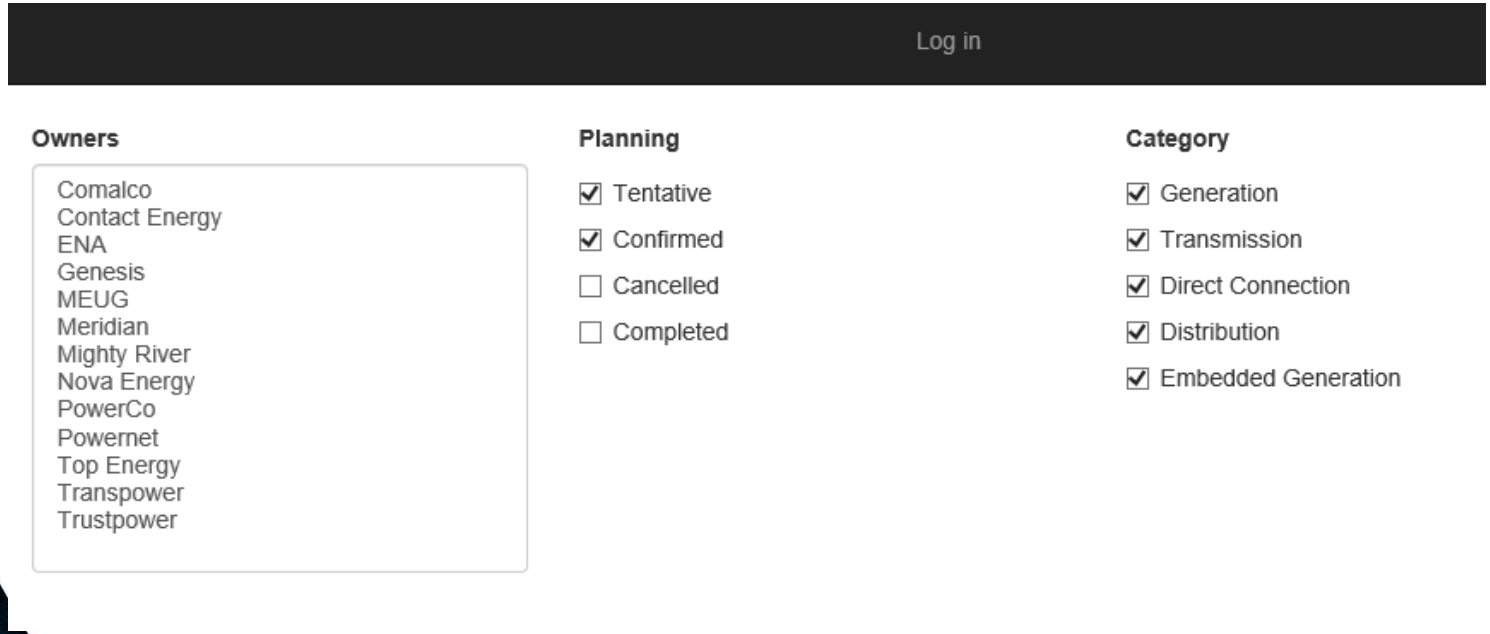
PLANNED OUTAGE COORDINATION PROCESS

POCP (PLANNED OUTAGE COORDINATION PROCESS)

The System Operator hosts the Planned Outage Coordination Process (POCP) where participants can upload and view planned outages of power system assets.



POCP (PLANNED OUTAGE COORDINATION PROCESS)



WHAT IS A BIG OUTAGE?

- It has a large market impact (locally or nationally)
- It might constrain your generation
- It may put you on N-security.
- It is longer than usual
- It is ‘last minute’

IDEAS:

- Those transmission outages constraining generation? (NZGB guidelines)
- The ‘RCP availability’ outages

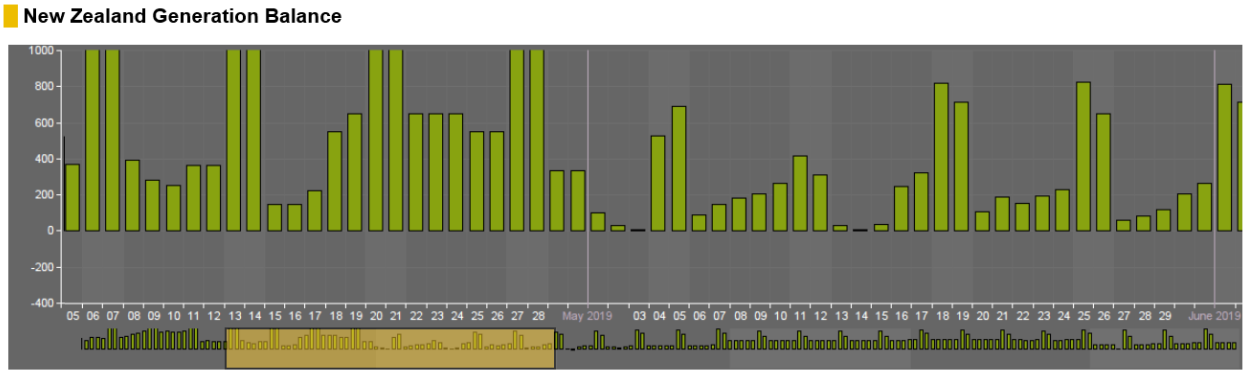
BUT will be different impact for each participant and highly dependent on different conditions

NZGB

NEW ZEALAND GENERATION BALANCE

NEW ZEALAND GENERATION BALANCE (NZGB)

- An aid for predicting periods of insufficient generation.
- Extracts POCP information and uses a simplified model to predict generation balance.
- Accessible from https://nzgb.redspider.co.nz/
- Login using POCP account.



Current estimated generation balance in MW based the long term load forecast

MORE INFORMATION

Journey of an outage animation (video designed for in-house training, but available here: https://vimeo.com/314357836/f205c7e029

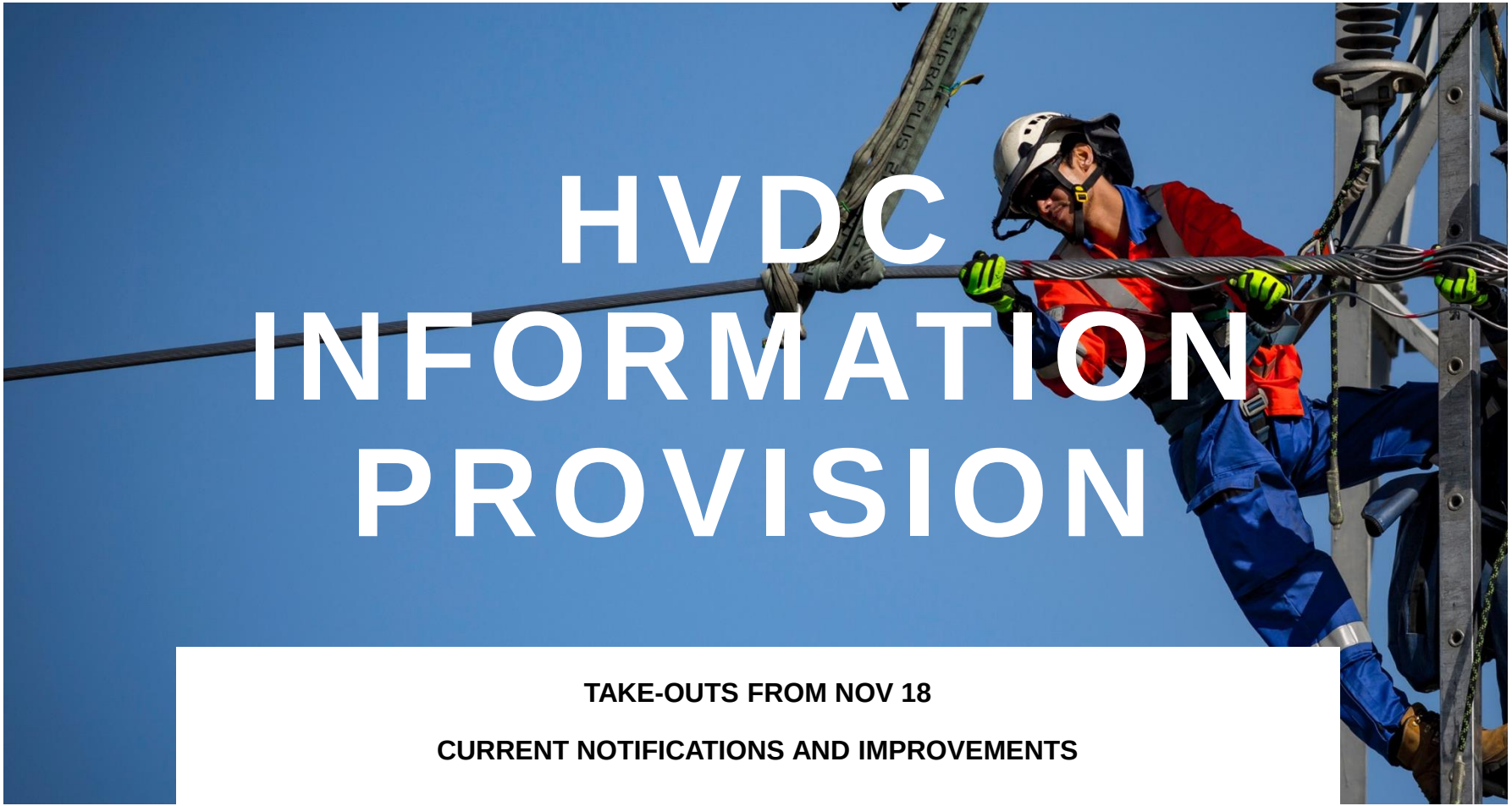
Outage Planning Policy

Guidelines for notifying and publishing an assessment

Video system operator process for notifications on supply shortfalls *(To come end of week.)*

Planned Outage Protocol Process

NZ Generation Balance



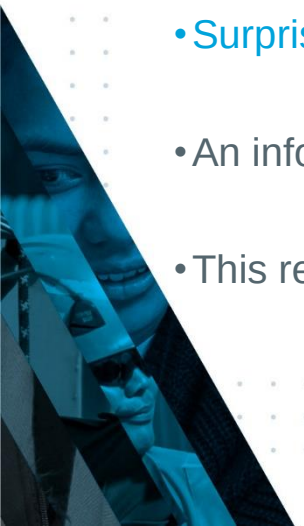
HVDC INFORMATION PROVISION

TAKE-OUTS FROM NOV 18

CURRENT NOTIFICATIONS AND IMPROVEMENTS

TAKE-OUTS FROM HVDC NOVEMBER OUTAGE

- System Operator maintains security, and provides information to the industry.
- Industry appeared surprised by the deficit reserves, and decision to shift the outage.
- Surprises don’t produce good market outcomes.
- An information issue, particularly around tight situations.
- This requires greater collaboration between system operator and industry



INCREASED SYSTEM OPERATOR INDUSTRY ENGAGEMENT

We want to increase engagement / collaboration with industry for tight situations

Be aware of risks, removing the element of surprise, and assist in resolving security issues

INCREASED SYSTEM OPERATOR MARKET ENGAGEMENT

How?

- Earlier industry engagement for potential security issues
- More industry education

Why?

- Give the industry time to respond

What?

- Cleaner WDS offers (MW Max) during tight points
- Make arrangements to mitigate risks (load/generation/outages)

SUMMARY

SHORT TERM CHANGES (ahead of May 19 outages)

- Closer look at industry notifications in planning time, and towards real-time
- Have made some changes to notifications for HVDC outages
- Propose changes for notifications <1 week out
- Teleconference for May 19 outage, in collaboration with Grid Owner representatives
- Clarification and education on industry notifications
- Implemented Outage Planning Policy

LONGER TERM

- Review of industry notifications: CANs, WRNs, GENs
- NZGB review – ongoing
- Continued education on information provision
- Continued engagement on 2020 outages

REFERENCE SLIDES


OUTAGE PLANNING
POLICY

WHY DO IT?

Clarify how, in our different roles, we will meet our obligations

Align with other issues:

- EA's Competition, Reliability and Efficiency objective
- Credible Event Review

Consistent and Repeatable policy that all stakeholders understand

ASSET OWNERS (INCLUDING GO)

- Notify
- Avoid security concerns
- Make changes if asked to do so
- Maintain full discretion around their outages

SYSTEM OPERATOR

- Assess all outages
- Identify problems and suggest mitigation strategies
- Reasonable and Prudent, but in an economic manner
- Identify impacts should those concerns be there in real-time

Principles	Responsibilities
When planning outages	
1. Consider concurrency of outages	**Asset owners** endeavour to avoid concurrencies and timing that cause security concerns
2. Consider timing of outages	**System operator** identifies problems and alternative options **Asset owners** decide whether to move outages

Principles	Responsibilities
When asset owners unable or unwilling to move outages that have potential to create a security concern	
3. Consider costs and benefits of outages	**Grid owner** considers costs and benefits of its outages. **System operator** identifies mitigations & considers costs/benefits to ensure cost-effective option is selected.
4. Identify potential impacts	**System operator** identifies potential impacts and publishes to industry as required.
Short notice outages which potentially cause a security concern	
5. Consider the notification period	**System operator** identifies potential impacts and publishes to industry as required.

TRIGGERS TO PUBLISH AN ASSESSMENT

- UNI or Z1 voltage stability is >97.5%
- NZGB indicates a surplus (N-1-G) <50MW
- The HVDC power limit is within 50MW of expected transfer
- Changes to a permanent security constraint
- A new significant manual security constraint is required
- Complex configurations and cannot be easily conveyed via POCP alone
- Security issues that require asset owner agreements, from multiple parties, remain outstanding
- A request from a participant (depending on the request)

HVDC OUTAGES 2020 - OVERVIEW

Reconductoring & Valve-based Electronics Replacement projects

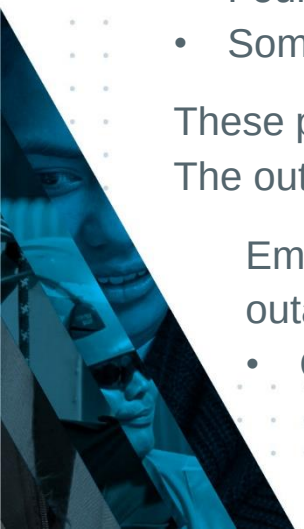
Outages from **7 January** to **9 April 2020** (Easter)

- 6 weeks Pole 2, plus 10 days testing Pole 2
- 6 weeks Pole 3
- Four bipole outages for pole and earth return transpositions.
- Some further transfer limitations when the earth return is taken out of service

These projects have been aligned since 2014 to reduce outages.
The outages have been in the system (POCP) since December 2017.

Emergency return to service periods expected to be several weeks for the Pole 2 outage; 1 - 2 weeks for the Pole 3 outage.

- Contingency plans being developed.



HVDC 2020 OUTAGES

HVDC transfer limits during the outages

HVDC System Configuration	HVDC Rating (MW sent)
All equipment in service	1200
Electrode (THW) in service + Pole 2 cct 2 out of service	700
Electrode (THW) in service + Pole 3 cct 1 out of service	500
One electrode conductor + one DC circuit in service	406

System security monitoring to include:

- hydro storage risks
- concurrent transmission and generation outages
- NZGB shortfalls