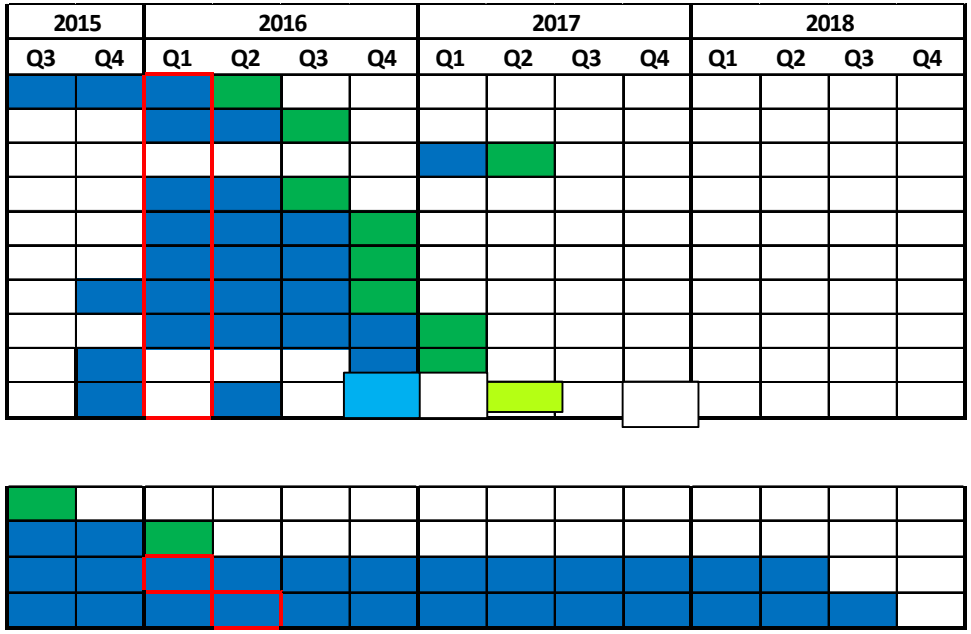
GC0048 – RfG Work Stream Timings

Richard Woodward October 2015

Overview

Implementation Mods		Dependencies	On-going related GC Mods
1	Banding	X	
2A	Compliance	1	
2B	Compliance	4-7	
3	General	1	
4	Fault Ride Through	1	GC0062
5	Voltage + Reactive Power	1	
6	Frequency [GC0087]	1	GC0079
7	System Management	1;6	
8	Distribution Docs G98	6	
9	Distribution Docs G99 & D Code mods	1; 2; 3; 4; 5; 6; 7	



Enabling/Related workstreams

X Ofgem/DECC Member States Decisions
GC0086 - Open Governance
HVDC
DCC

Key

Workgroup Output
Ind. Consultation/NRA Decision
Code entry into force

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Approach for the RfG work streams

- Formed on the basis of code mapping exercise at GC0048
- x7 work streams identified (plus x2 for D-Code), which would split into sub-workgroups (also separate mods?)
  - Some sub-workgroups would be done by existing Grid Code mods, e.g. Frequency – GC0087 + GC0079
- GC0048 would convene solely to manage Banding, Compliance, and General work streams
- It would then have Project Management oversight for the technical sub-groups and ensure timely progress and feed back to GCRP/DCRP

Work stream Details

- **Mod 1 - Banding**
  - Banding thresholds levels
  - Legal text to apply into the codes
  - Link to licences
  - CBA + public consultations
  - Future changes process
- **Estimated Completion Date: Q1 2016**

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Work stream Details

- **Mod 2 – Compliance**
  - Type B/C/D - testing - validation of models
  - ONs
  - Simulation/Testing (SPGMs; PPMs)
  - Derogations*
- **Estimated Completion Date (Phase 1): Q2 2016**

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Work stream details

- **Mod 3 - General**
  - Definitions
  - Scope:
    - New vs Existing
    - Exclusions
    - Retrospectivity
      - Application to heavily 'modified' existing generators
      - Public consultations process
  - Emerging Technologies carve out
  - STC changes (Offshore?)
  - CBAs (above + derogations)*

Work stream details

- **Mod 4 - Fault Ride Through [NOT GC0062]**
  - Type B-D (inc settings)
  - NEW! Type B (SPGM) active power recovery
  - NEW! Type B-D (PPM) fast fault current injection + active power recovery
- **Mod 5 - Voltage and Reactive Power**
  - Type C-D voltage stability - automatic disconnection (inc type c-d SPGM; PPM)
  - Type C-D provision of active power over a range of system voltage changes
  - Type C-D angular stability (incl Type D SPGM)
  - Voltage ranges (B-D; SPGM; PPM)
  - Type B-C (SPGM) - reactive power (inc settings; max capacity/below max capacity)
  - Type B (SPGM) - voltage control
  - Type D (SPGM) - excitation control system (inc AVR)
  - Type C-D (PPM) - reactive power control modes (voltage/reactive/power factor) (GC0075?)

Work stream details

- **Mod 6 – Frequency [GC0087 + GC0079?]**
  - Type A-D frequency ranges
  - RoCoF/withstand (GC0079!)
  - LFSM-O, inc settings
    - reconnection + disconnection
  - Maintenance of active power during falling frequency (+ parameters)
  - Type C-D: period within which the adjusted active power set point must be reached
  - NEW Type C-D: LFSM-U (inc settings)
  - Type C-D: FSM (inc settings) (GC0087?)
  - Ancillary Services Monitoring
  - Type C-D: Frequency relay settings
  - Type C-D: Under frequency disconnection (pump-storage/generators acting as load)
  - Type C-D: Island operation
  - Type C-D (PPM): Synthetic inertia

Work stream details

- **Mod 7 - System Management**

  Mostly parameter setting or evolving existing requirements:
  - Type A - automatic reconnection (inc settings)
  - Type B - System restoration (inc settings)
  - Type B - Control Schemes
  - Type B - Protection
  - Type B - Operational Metering
  - Type C-D - Black start capability [Peter Chandler MO]
  - Type C-D - quick re-synchronisation capability
  - Type C-D - monitoring (DSM; fault recording; quality of supply)
  - Type C-D - simulation/models
  - Type C-D - devices for system operation/security
  - Type C-D - ramp rates
  - Type C-D - earthing
  - Type D - synchronising (inc settings)

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Work stream details

- **Mod 8 – Distribution Docs – G98**
  Revision of G83 to incorporate RfG and EN50438
  - G83-1 Type Tested Generating Units up to 16 A per phase
  - G83-2 Multiple Type Tested Micro-generating Plants in a Close Geographic Region and Type Tested Generating Units above 16 A per phase but with a maximum capacity less than 50 kW
- **Mod 9 – Distribution Docs – G99**
  Revision of G59 to incorporate RfG and TS 50549-1 & 2
  - Present consideration RfG Types A and B
  - Then consider Types C and D (in conjunction with Mods 1-7)

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Work stream details

- ****NEW** Mod X - Regulatory Authority/Member State (Ofgem/DECC) responsibilities**
  - Determine who 'Relevant TSO(s)' for GB Synchronous area are
  - Assign actions under code to TSO(s) (RACI)
  - Confidentiality
  - Consider Licence changes

Back-up slides

RfG Plan On a Page

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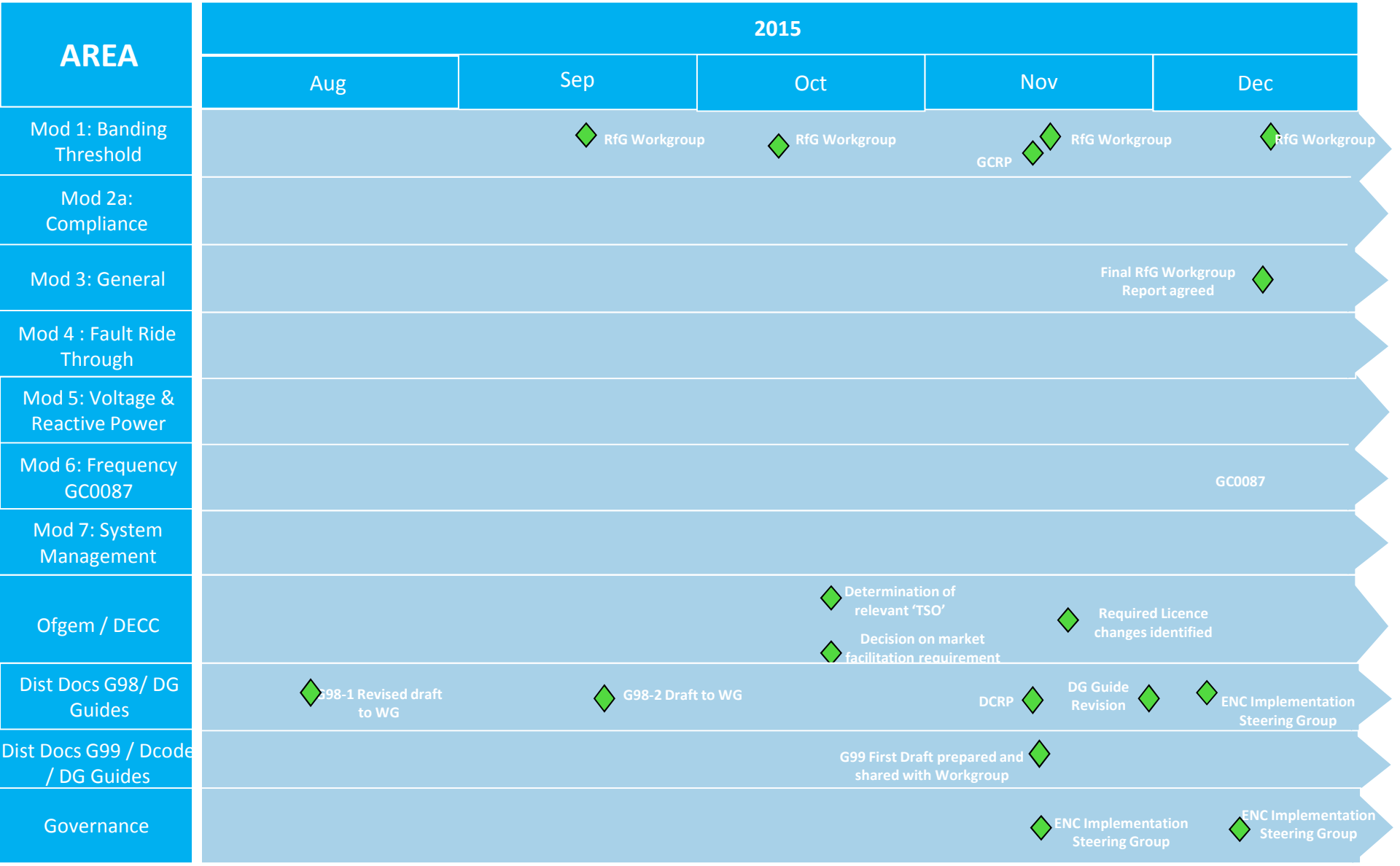

RfG Plan On a Page

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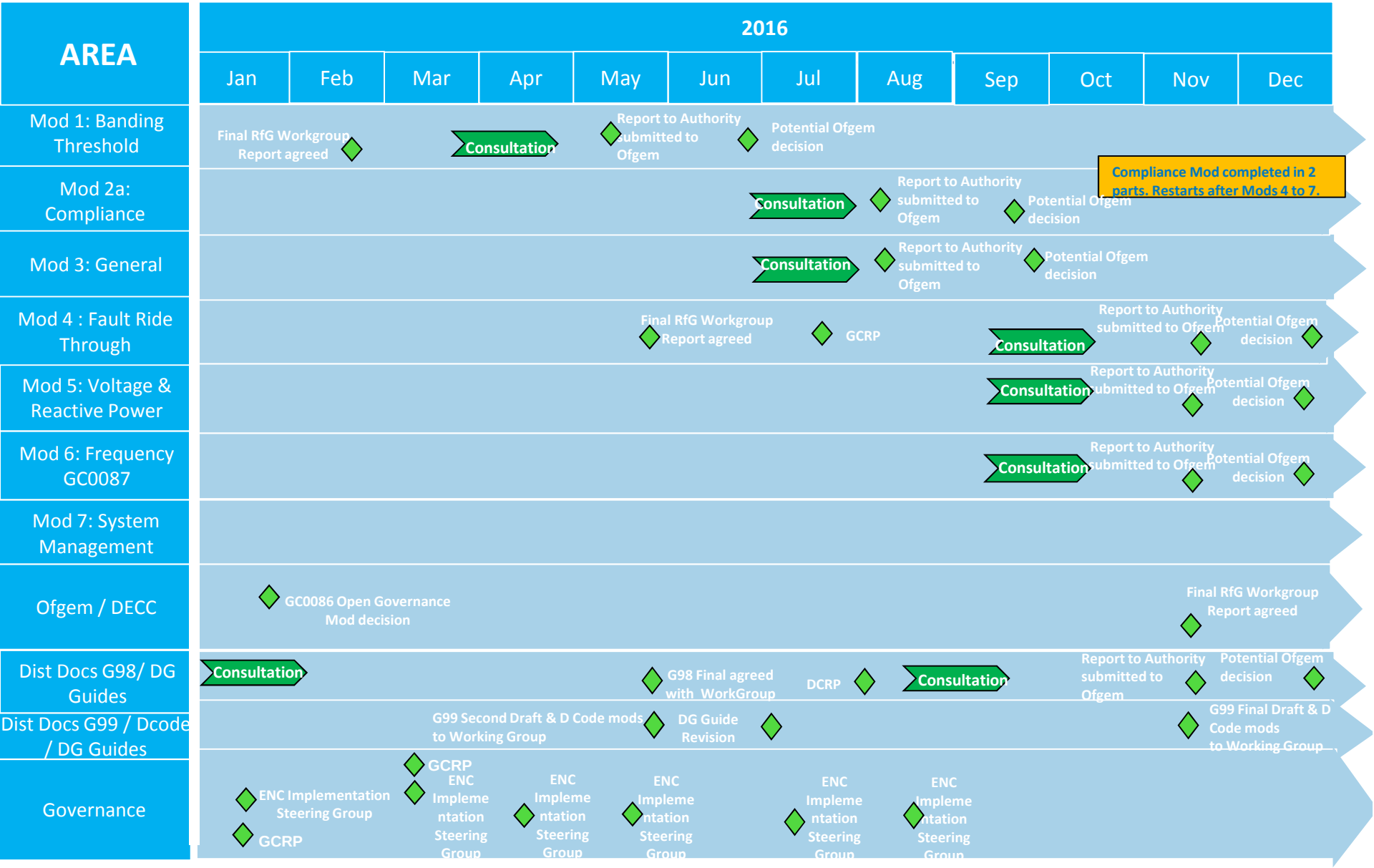
Workgroup subgroups established TBC



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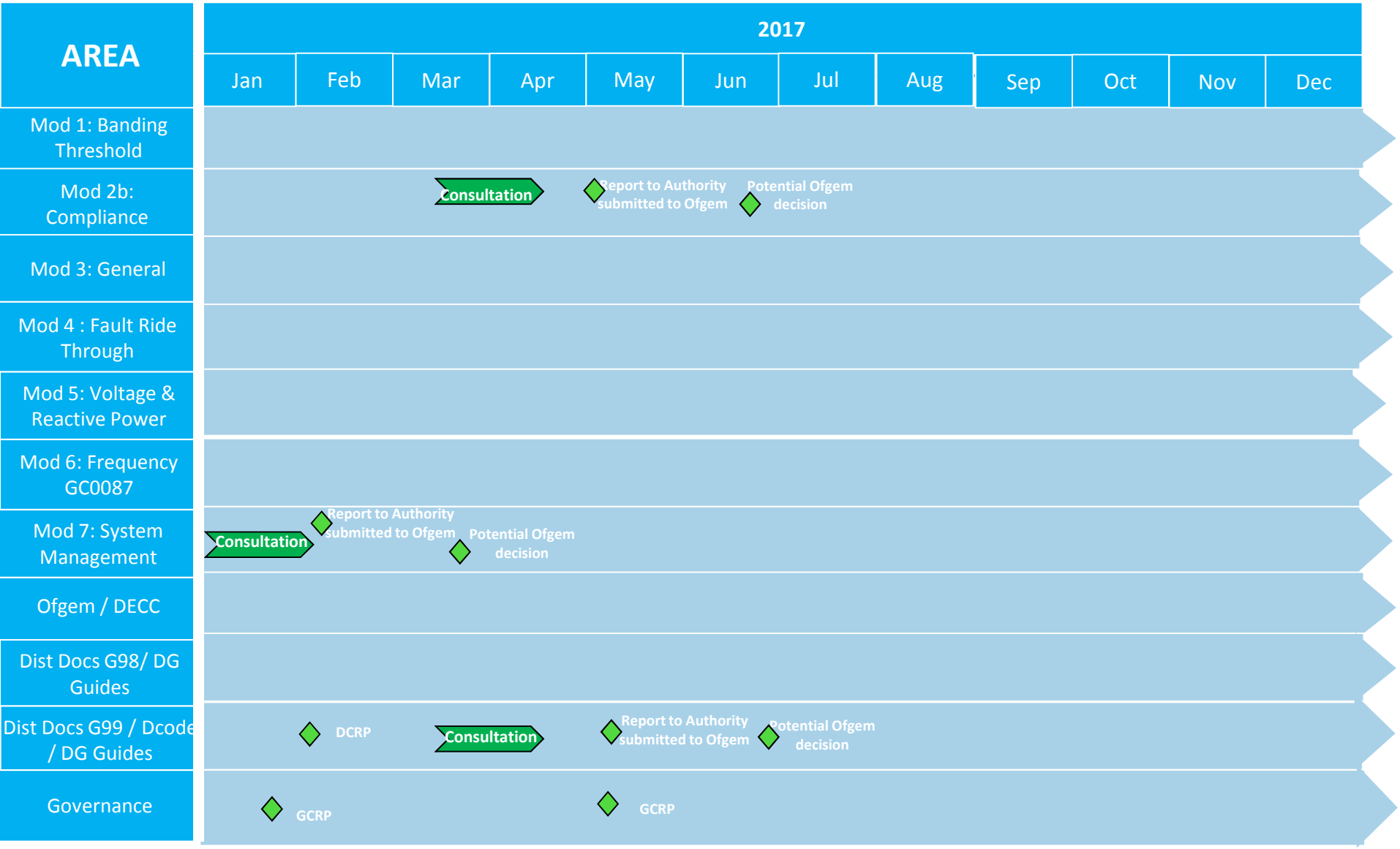
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