Wind Farm
Commissioning & Testing Workshop

Specification & Construction

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Spec & Construction: Introduction

This presentation covers:

- Overview of the project delivery phase
- Key activities and Milestones
- EirGrid / IPP Interfaces
- Pre-Grid code testing/Commissioning & Energisation

Spec & Construction: New stations

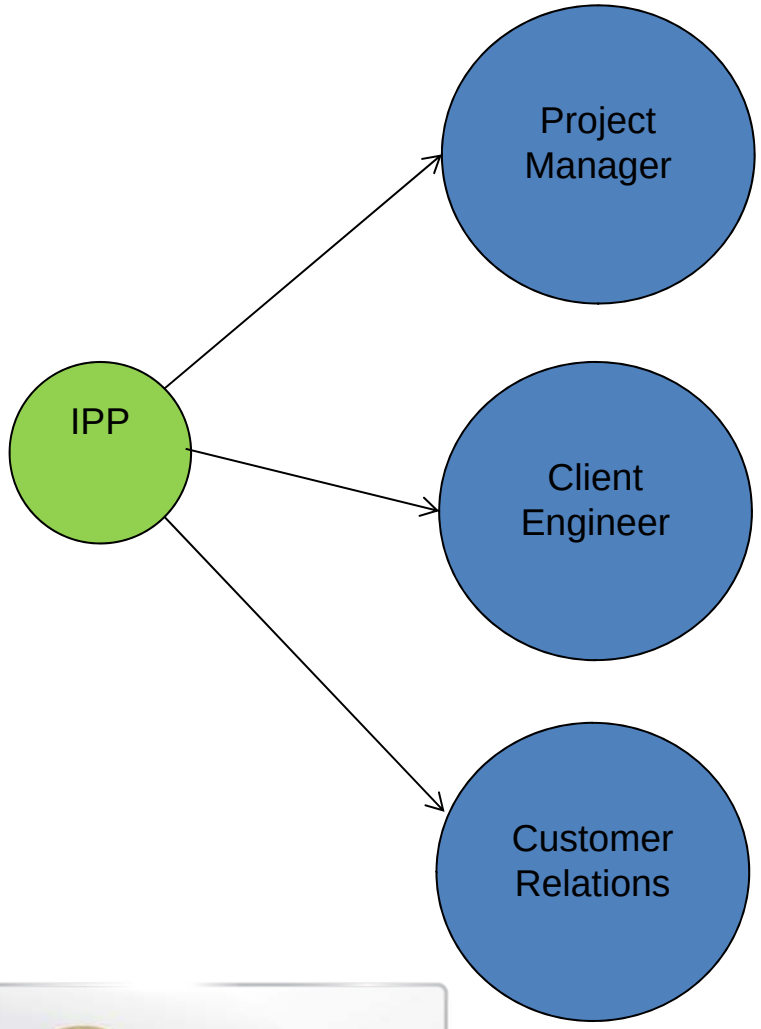








Spec & Construction: EirGrid Team & Role



- Manage EirGrid project team
- Project cost and schedule
- Change control & Reporting
- Manage ESB Telecoms
- Commercial / Non-construction issues

- Issue Functional Specs to IPP
- IPP Design Review / Construction oversight
- Contestable programme oversight
- ESB Networks Liaison
- Arrange ESBN Commissioner attendance
- Site snagging and handover
- Ensure completion of pre-Grid Code testing

Customer Relations Responsibilities:

- Manage Customer account
- Deal with non-project specific issues
- Coordinate requests for modernisations / replacement.

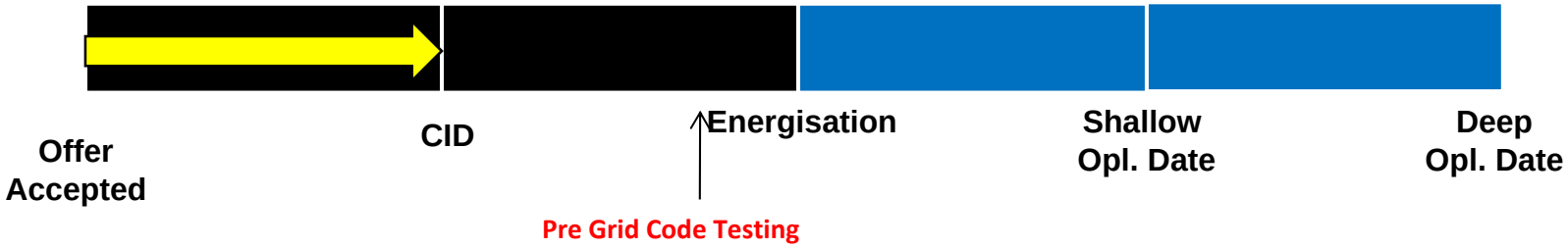
Spec & Construction: Milestones

- Offer Accepted
- Consents Issue Date (CID)
- Energisation
- Shallow Operational Date
- Deep Operational Date



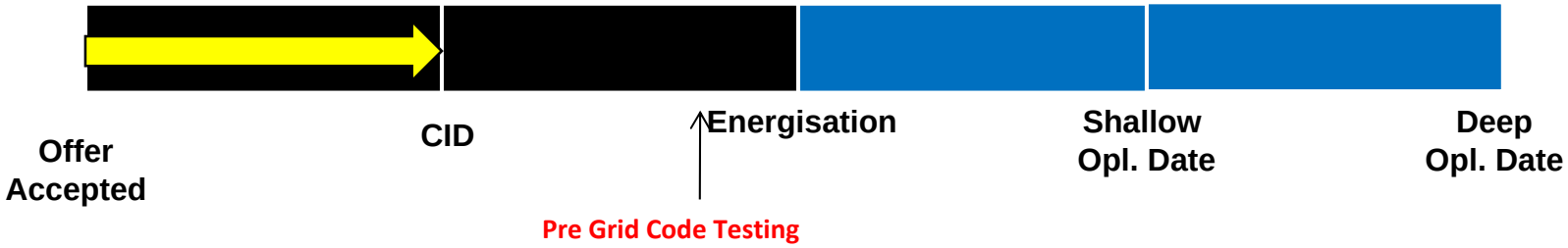
Offer Accepted | **CID** | **Energisation** | **Shallow Opl. Date** | **Deep Opl. Date**

Spec & Construction: consent phase
EirGrid Key activities



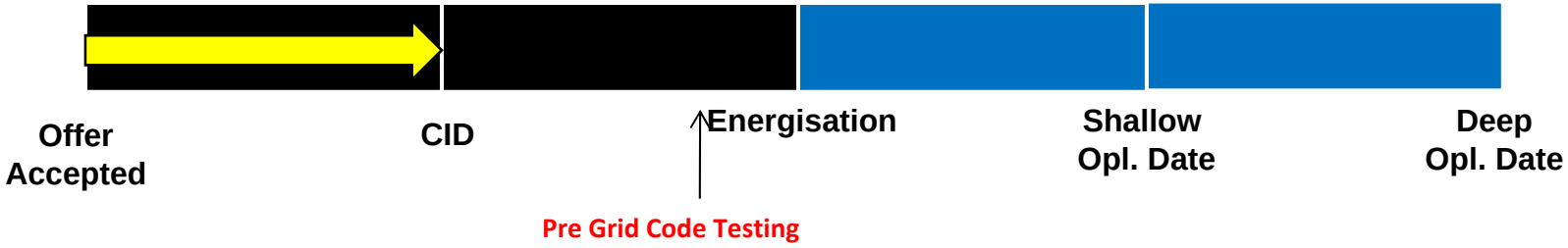
- Planning Permission for Shallow Works
- Project definition and initiation
- Programming and resource allocation
- EirGrid functional specifications, interlock requirements & signal lists

Spec & Construction: consent phase
IPP Single Line Diagram



- Kick off meeting: IPP Confirms SLD in application is the final version
- Or IPP Provides updated version.
- EirGrid signal list / Interface design will be based on this SLD.

Spec & Construction: consent phase IPP Role



- Issue Programme => realistic and achievable. Basis for EirGrid & ESBN programmes.
- Issue/confirm final MV SLD: Basis of signal lists and interface design.
- Review EirGrid functional specification

Spec & Construction: consent phase
Interface Development: IPP SLD

- Final IPP SLD
  - Arrangement of MV feeders & incomers
  - Switchgear designation
  - Transformers tap
  - Rating of switchgear, wind turbine generators & transformer(s)
  - Changes may cause delays.

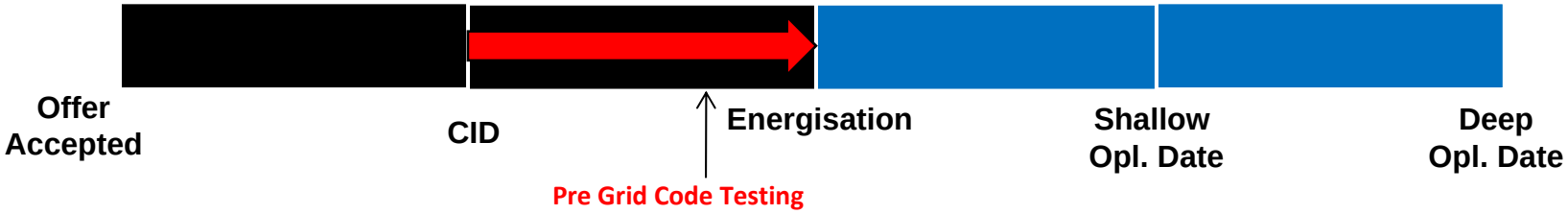
Spec & Construction: consent phase Interface Development: Signal List

- EirGrid Signal List defines all requirements for operation and control of the Wind Farm
- Developed from IPP SLD and EirGrid SLD
- Controls
- Measurands
- Signals
- Indications

Specification & Construction: The IPP / EirGrid Interface:

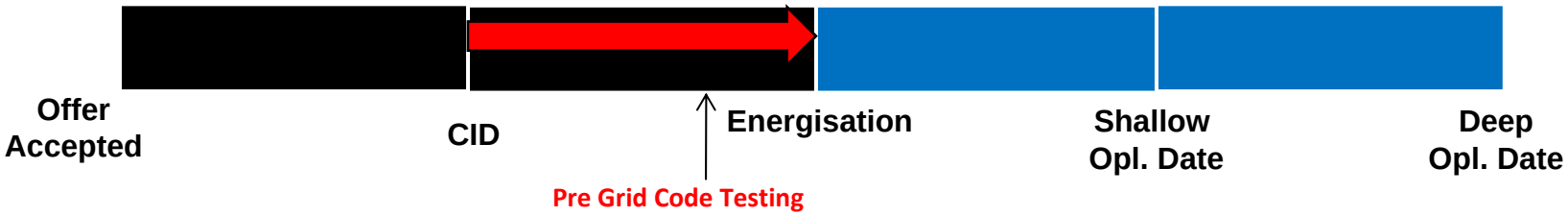
- EirGrid Interface Schematic based on IPP SLD and EirGrid signal list. Contains:
  - Requirements as per Signal List
  - Trips commands between HV and LV circuit breakers
  - Position indication, Interlocking requirements & Protection signals
- Design meetings to agree final schematic prior to construction phase

Specification &Construction Build phase EirGrid Role: (1)



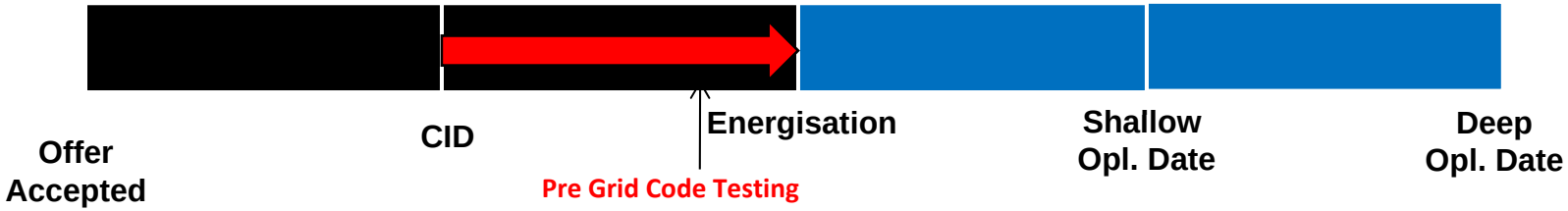
- Project Agreement (ESBN) where non-contestable
- Review of IPP detailed design drawings and Programme and provision of comments to IPP
- Issue updated Programmes as required
- Arrange construction of telecoms infrastructure

Specification &Construction Build phase EirGrid Role (2)



- Monitor progress and compliance to Spec of IPP Construction
- Schedule: Outages, ESBN Commissioners and ESB Telecoms
- Ensure all IPP Construction requirements met pre GCCT and pre-energisation.

Spec & Construction: Build Phase IPP Role



- Timely & comprehensive submission of design packages.
- Timely programme updates to EirGrid
- Pre-commissioning and complete EirGrid documentation
- Facilitate final site handover checks by EirGrid and ESBN personnel

Specification & Construction: Pre-commissioning Testing

- All EirGrid, IPP and ESB works are to be completed and pre-commissioned before commissioning of the shallow works begins.

1. IPP Wiring completion cert.
2. IPP pre-commissioning record sheets
3. ESB Telecoms Wiring completion cert.
4. EirGrid Transmission Station pre-commissioning

Specification & Construction
Pre-energisation tests

Prior to Energisation:

- Pre-energisation Commissioning
- Signal Testing

Specification & Construction: Commissioning Testing

Tests by ESBI Commissioner, before Energisation:

1. EirGrid station - NCC signals function tests
2. IPP – NCC signals functions tests
3. IPP/EG Interlock functions test record cert
4. IPP/EirGrid Earth system completion cert
5. EirGrid Protection settings and verification

Specification & Construction: Pre- Grid Code Testing

- Energisation by ESBN to EirGrid Energisation Instruction.
- Handover to Operational Services &Performance

<u>Post Energisation:</u>

- Proceed to complete Dispatch Testing and remainder of Grid Code Tests


EIRGRID
semo
Single Electricity
Market Operator
SONI
System Operator for Northern Ireland