Biomethane Day
National Grid Projects

21st May 2013 – Andrea Godden

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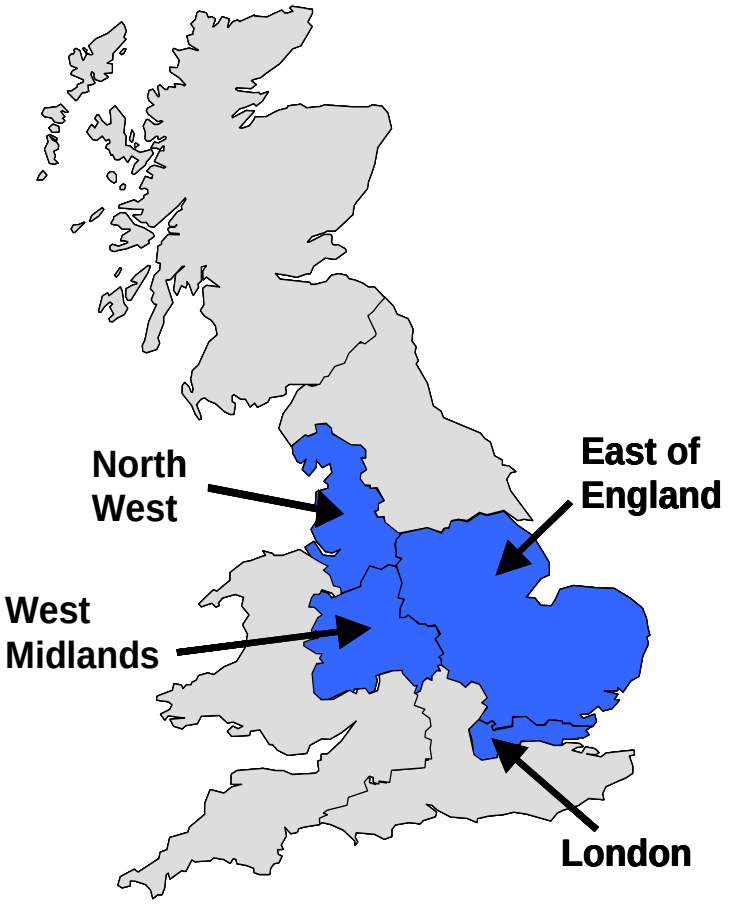
National Grid Gas Distribution

- Owner and Operator 4 Gas Distribution Networks
- 190,000 kilometres of gas distribution pipelines
- Operate 24/7 Emergency Service
- Deliver Connections to our Networks
- Carry out Repair & Maintenance of Assets



Gas to Grid Connection Models

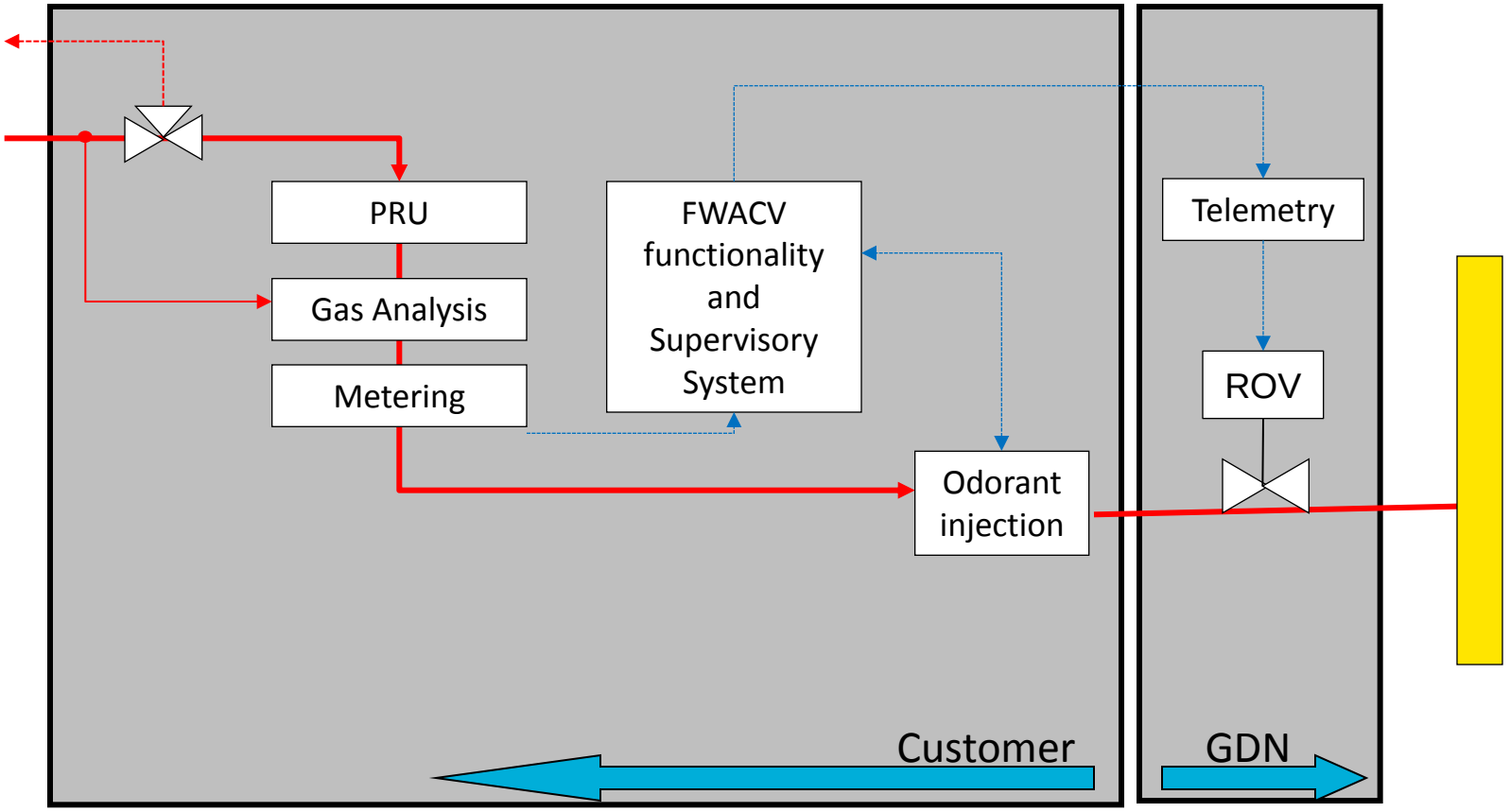
Minimum Connection

- Enables customer choice/market competition
- Customer procures direct the Injection facility from our approved vendors.
- 3rd Party ownership, responsible for the operation and maintenance of the injection facility
- Network Entry Agreements – development of 3rd party contractual operational requirements
- Support UIP Connections *(does not include LTS connections)*

Maximum Connection

- National Grid manages the end to end delivery of the connection
  - Injection facility procurement from our approved framework agreement
  - Connection Design
  - Pipeline connection
- National Grid will own, operate and maintain the injection facility

Minimum Connection



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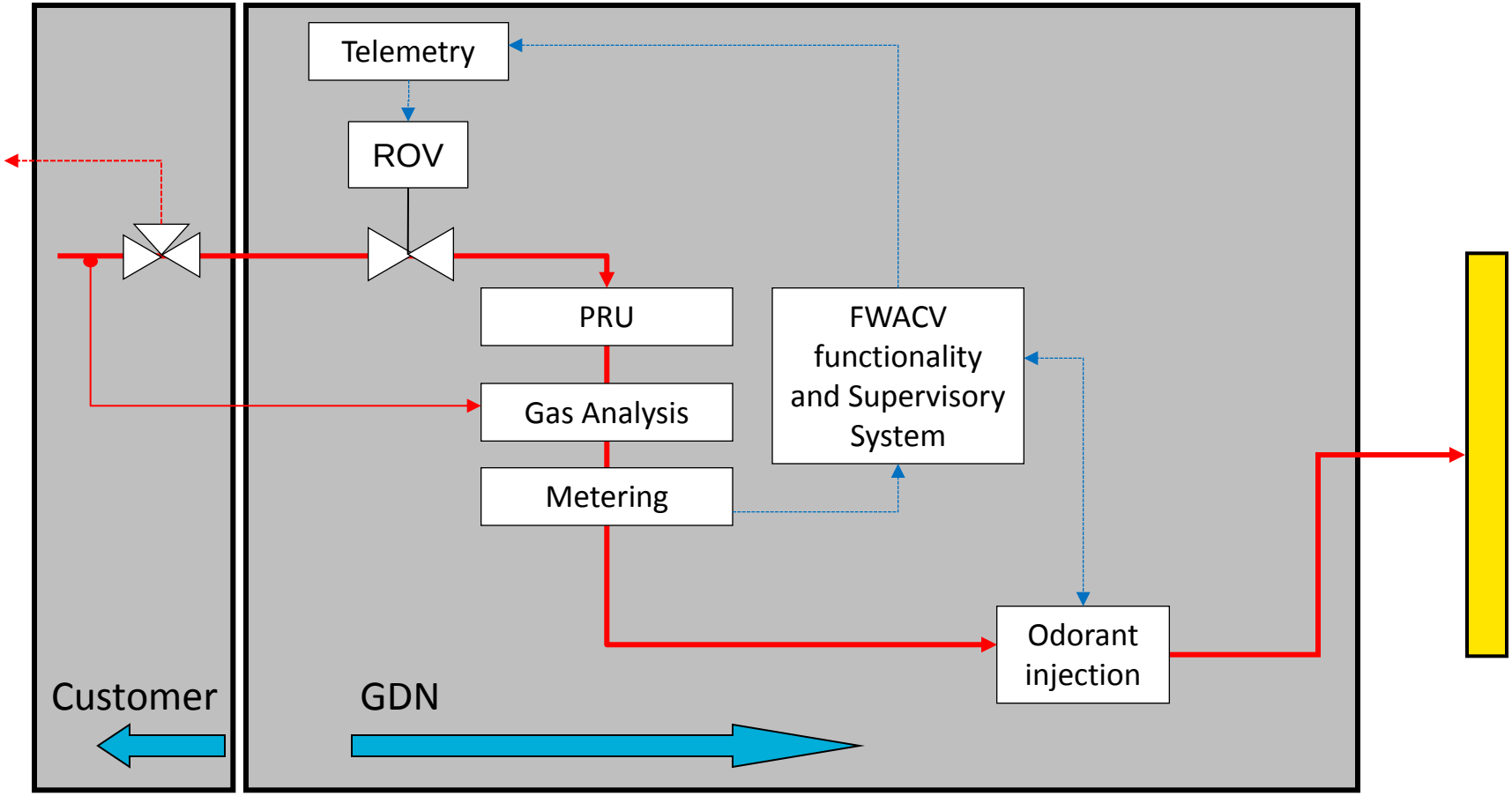
Maximum Connection



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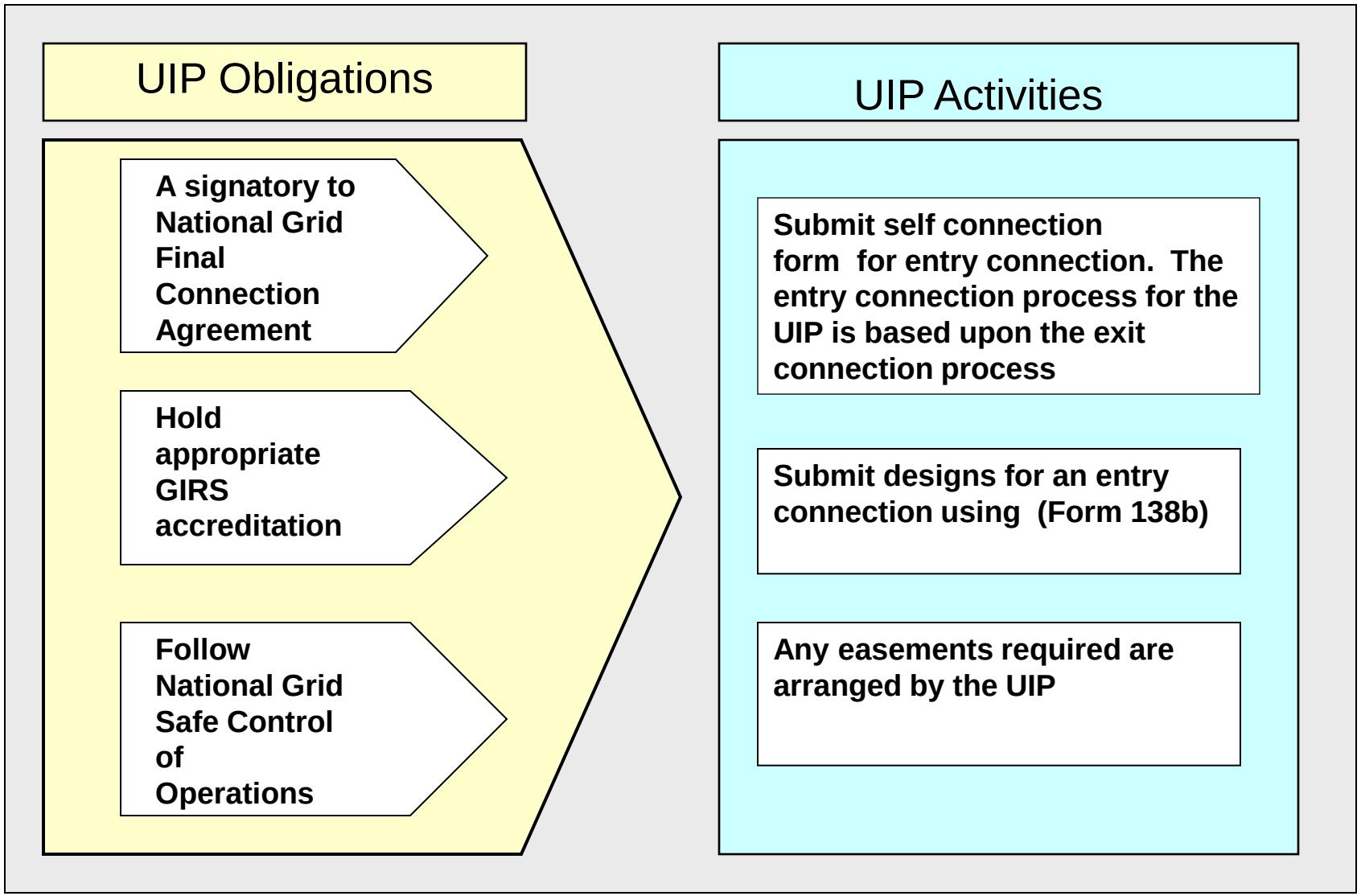
Supporting 3rd Party Entry Connection's



Severn Trent Water – Gas to Grid Connection at Minworth

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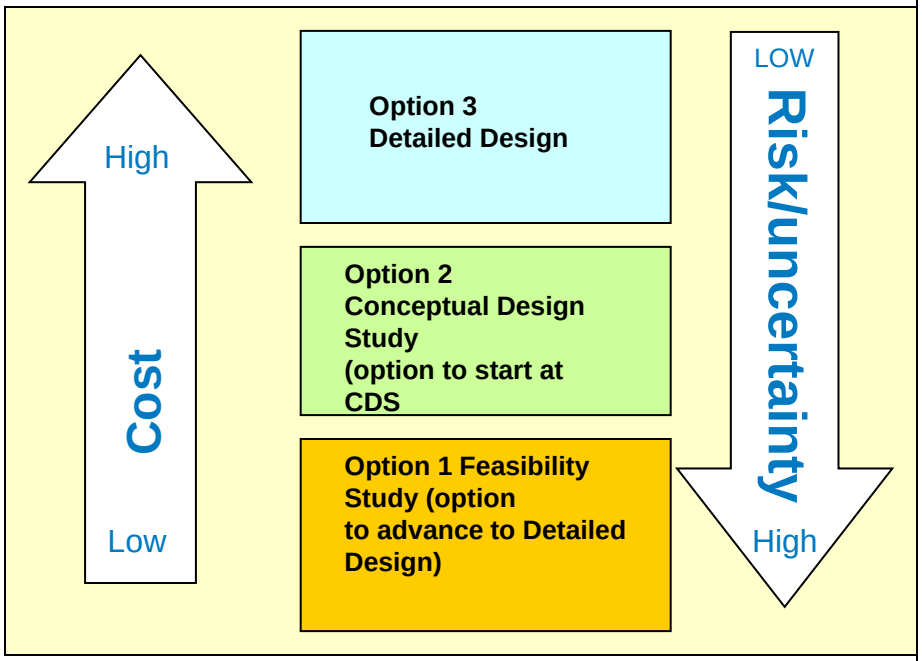
Minimum connection – LTS

- National Grid to undertake the design and construction of the LTS Connection to enable the injection of circa 900scm/hr in the West Midlands Network.
- STW to procure, own, operate and maintain the injection facility including compression



Technical Challenges

- Developing the current Minimum Exit Connection for LTS into an entry connection process
- Compression into the Network
  - Assurance of Design Operation & Maintenance
- Compliance to PSSR means that NG are reliant upon 3rd Party Primary Protective Device
- Establishing Control Philosophies – that are site specific
- Data Transfer for Gas CV & Measurement associated with Critical National Infrastructure

Bio Group – Stockport Project
UIP Trial and IFI funded

- **Customer**
- Bio Group on behalf of Fairfield Bio Energy
- **Site**
  - Fairfield Bio Energy,Bredbury Park Industrial Estate, Stockport
- **Injection Facility**
  - NG to Procure, operate and maintain the Injection Facility
- **Connection**
  - North West Medium Pressure Network, GIRS Registered UIP to undertake connection (PN Daly)
- **Date for substantial completion**
  - Summer 2013
  - "UIP Pipe" is adopted by National Grid

- What is covered by the IFI funding
- Injection Facility
- Remote Monitoring Point – required for Oxygen blending
- Remote Monitoring Point – ancillaries – connection to network, connection to electrical power supply
- Support Structure for main site Installation
- Fabrication works associated with connection of the installation to the Network Entry main
- Customer costs/considerations
- UIP Pipeline Connection costs for design, build and construction
- UIP must be a signatory to the NG current UIP connection framework. UIP must accept NG amendments to facilitate entry connection.

Bio Group – Stockport Project
UIP Trial and IFI funded

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- **Commercial and Technical Challenges**
  - UIP – Design Approval Process
  - UIP - Understanding of Easements
  - Entry Gas Temperatures
  - Communication with Remote Monitoring Point
  - Primary & Secondary Communications

- **Solution**
  - **Working with our Customers and their UIP**
  - Development of Fast Track Forms with the relevant contracts – design approval
  - Utilisation of existing Lloyds Audit regime. Developing assurance requirements for Entry connections
  - Customer/UIP guidance on the tripartite agreement and giving advice and guidance through the Easement process.
  - Entry Temperatures-adjustment to the Maximum Operating Pressure, modifications to NG document NG/PM/NP/14 E for use by UIP & NG
  - Communications – joint design activity with NG and the Civils designers to ensure that ducting and positioning is established.

Vulcan Renewables – Doncaster Project

- **Minimum Connection**
- **Customer**
  - Vulcan Renewables (Future Biogas)
- **Site**
  - Lindholme, Doncaster
- **Connection**
  - Injection of 450 scm/h into the East Midlands Intermediate Pressure (IP)Network,
  - GIRS Registered UIP to undertake connection
- **Date for substantial completion**
  - Summer 2013
  - "UIP Pipe" is adopted by National Grid

- **Injection Facility**
  - Customer to Procure Injection Facility from NG's approved suppliers
  - For this specific project the customer will procure the ROV & RTU to NG specification /standards.
  - 3rd Party to Install the facility on behalf of the customer
  - NG will facilitate and oversee the connection of the customers facilities to the NG facilities.
  - NG to take ownership and adopt the ROV & RTU

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Improving the customer experience