
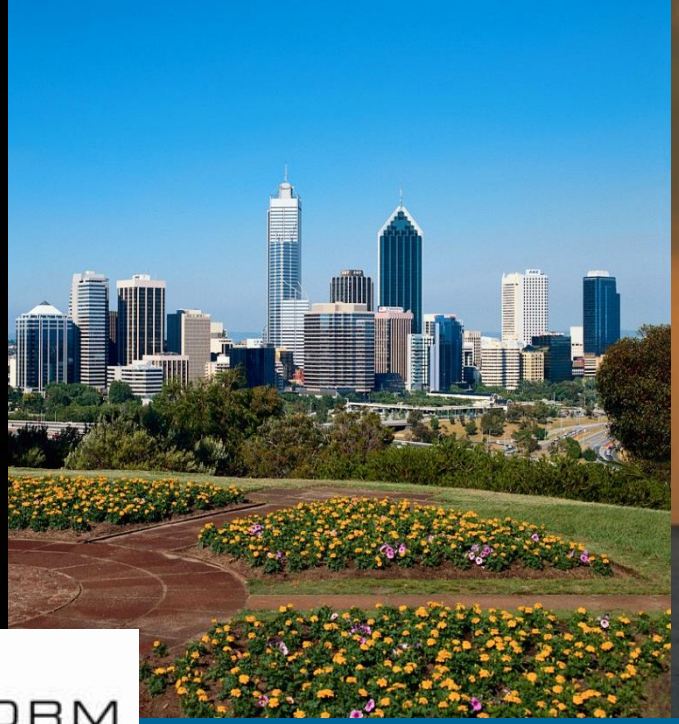


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Gas Market Design Considerations

GAB Presentation

Trent Morrow, Market Reform

18 February 2014

Outline

- Introduction
- Why implement a gas spot market and pipeline capacity trading arrangements?
- Requirements for a successful market
- Key considerations for WA gas market

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Introduction

- Key issues for the Gas Advisory Board (GAB) to consider in relation to the need for and the design of a gas spot market in Western Australia (WA).

- Characteristics of the WA gas market:
  - main gas supply source is geographically distant from the main domestic gas demand locations.
  - gas transmission pipelines are managed by a number of different companies under their own commercial arrangements.
  - the bulk of demand is industrial and power generation and is served directly from transmission lines rather than distribution networks.

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Introduction

- A *gas trading hub* is a marketplace for the wholesale trading of gas.
  - typically a location with a significant concentration of supply or a major trans-shipment point
- A *demand hub* allows gas users and shippers to trade gas at the point of delivery to a distribution network.
  - For example, the Short-Term Trading Market (STTM) in Sydney, Adelaide and Brisbane.
- A *market carriage model* uses a sophisticated scheduling arrangement where bids and offers at different locations are used to centrally schedule all injections and withdrawals into the network.
  - For example, the Victorian Gas Market.

Why implement a gas market and pipeline capacity trading arrangements?

- Economic Efficiency and Transparency
  - Signal efficient production and use of gas as well as efficient utilisation and investment in infrastructure.
  - Transparent reference price aids decision making.
- Portfolio management
  - Short term portfolio management around long term contracts.
  - Base for development of forward market.
- Reduced transaction costs
  - Matching buyers and sellers
  - Standardised products
  - Centralised settlement and prudential
  - Streamlined gas delivery processes
- Facilitate pipeline capacity trading

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Requirements for a successful gas market

- Maximise liquidity
  - Liquidity is a key measure of success.
  - Participation, efficient design, simplicity of arrangements, transaction costs drive liquidity.
- Maximise participation
  - Potential trading participants include producers, end users, GPG, retailers and financial institutions -> *hub must meet their needs.*
  - Potential sources of liquidity include changes to supply / demand, pipeline imbalances, gas storage injections and withdrawals.
  - Potential participation of financial institutions.
- Pipeline capacity trading arrangements
- Minimise transaction costs
- Reliability of delivery

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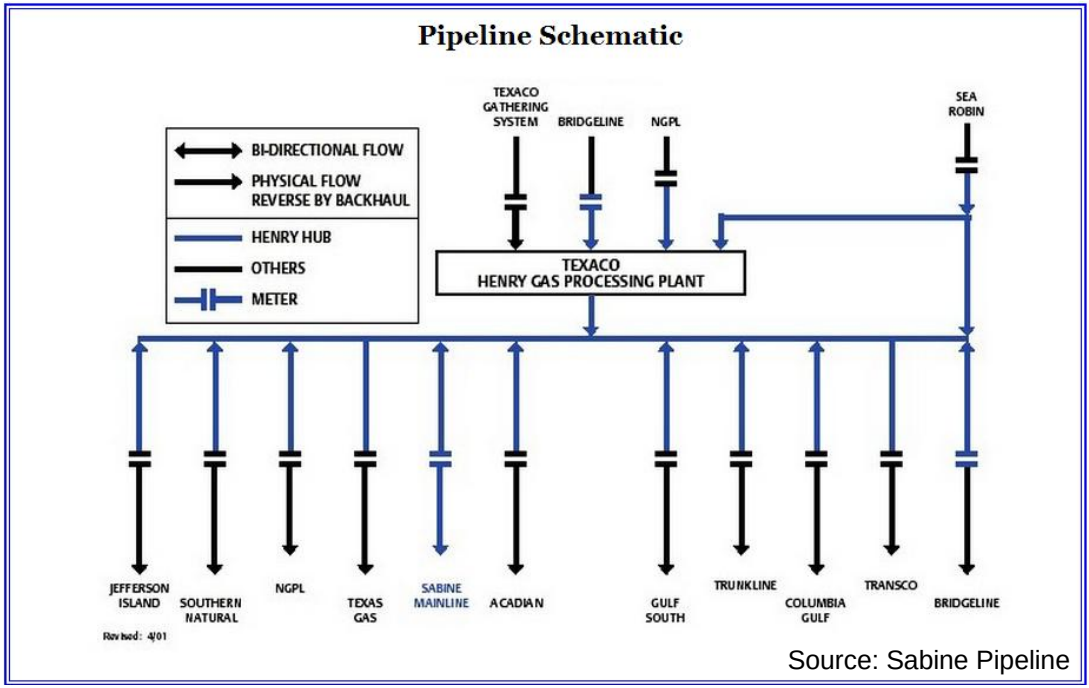
Key design components
Hub Definition

- Gas trading hubs are typically a location with a significant concentration of supply or a major trans-shipment point.

- Physical hub
  - market for the trading of gas for delivery to, and receipt from, a specific geographical location.

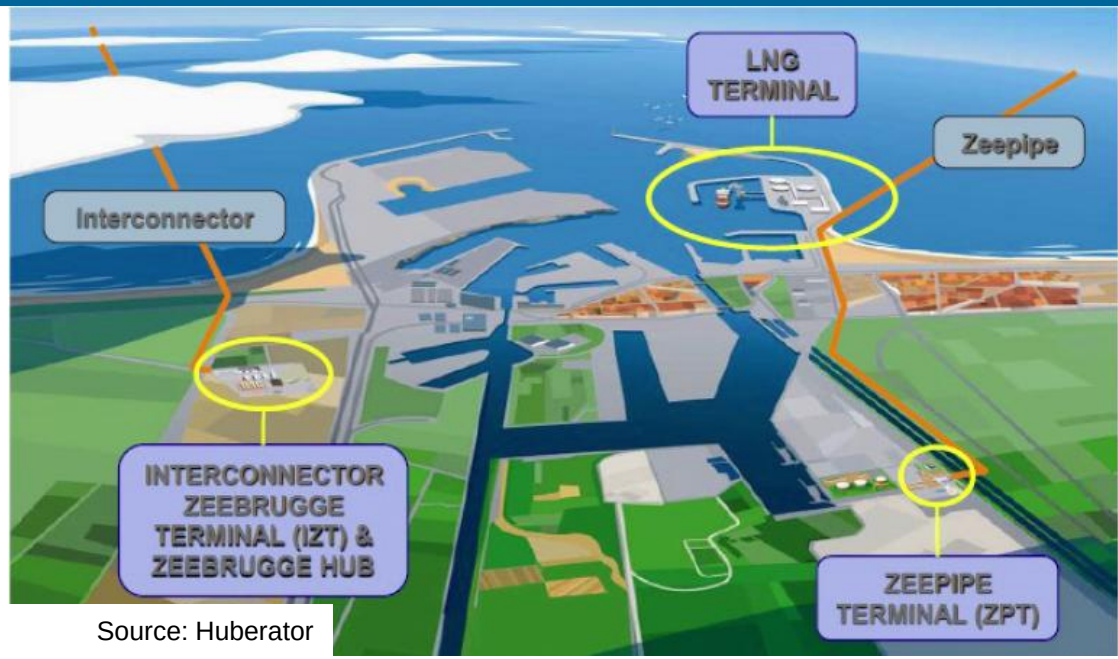
- Example of Physical Hubs:
  - Henry Hub
  - Zeebrugge Hub
  - Wallumbilla Gas Supply Hub
  - Frankley Road Hub



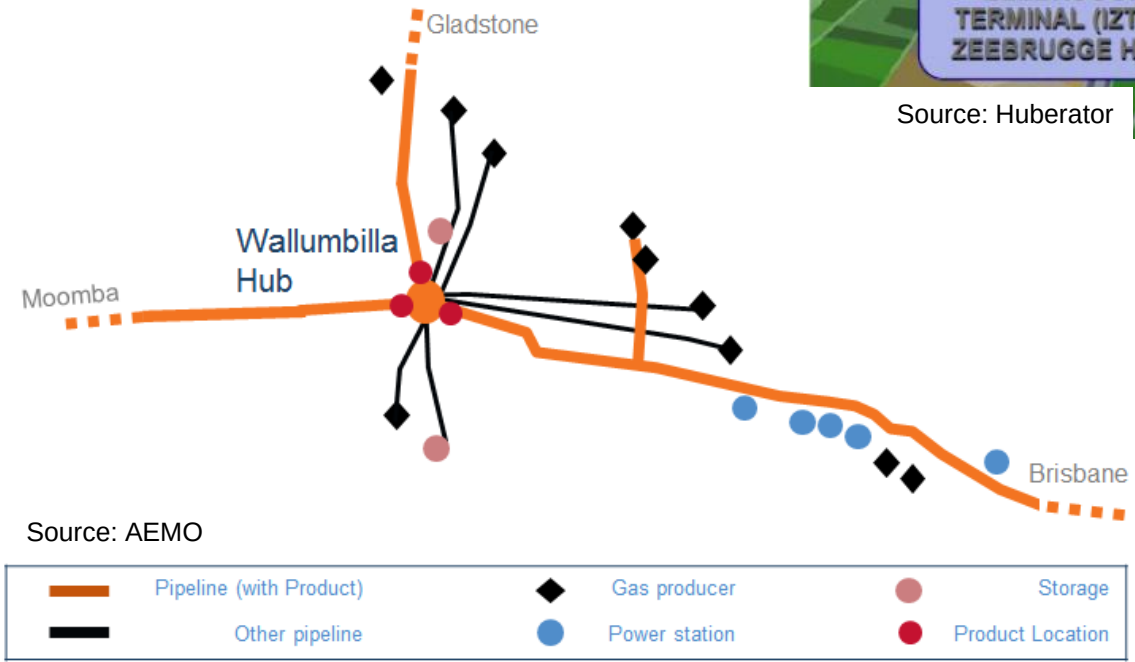
Source: Sabine Pipeline

Hub Examples: Physical Hubs

Zeebrugge Hub



Source: Huberator



Source: AEMO

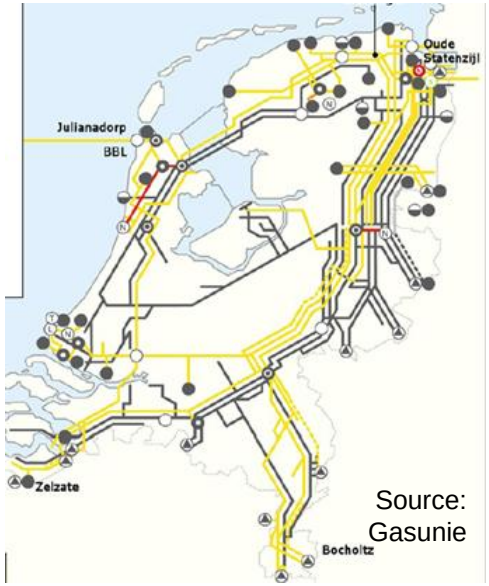
Wallumbilla Gas Supply Hub

Hub Examples: Virtual Hubs

- Virtual hub
  - A virtual hub does not correspond to any one physical point; rather gas can be sold or purchased at any point within the hub.
  - Central coordination is required to ensure that gas can be physically delivered.

- Example Virtual Hubs:
  - National Balancing Point (NBP) in the UK
  - Title Transfer Facility (TTF) in the Netherlands

Title Transfer Facility



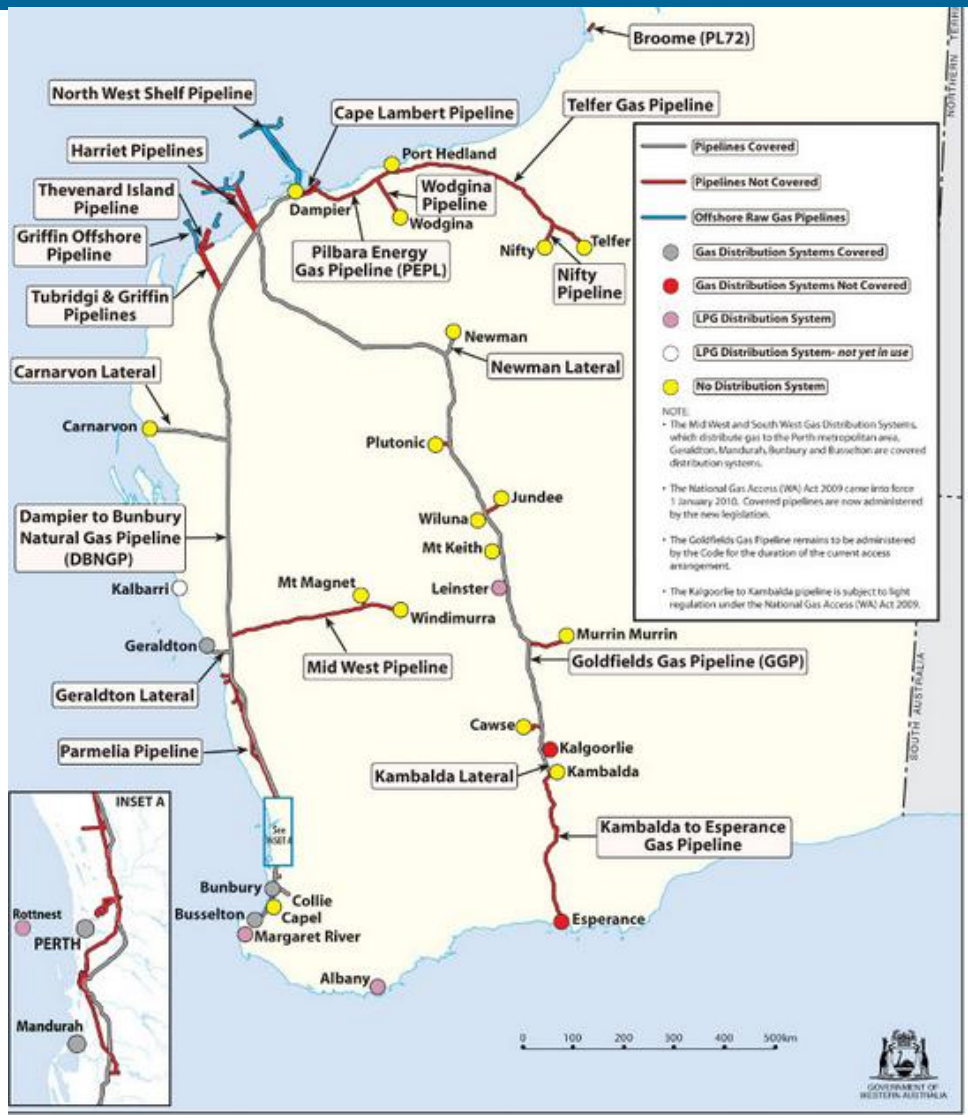
Source: Gasunie

National Balancing Point

Source: National Grid

Key design components
Hub Definition

- Potential locations for a hub in WA:
  - North West Shelf
    - Direct access for producers
  - Mondarra Storage Facility
    - Storage provides additional source of liquidity.
  - *What services are available at these locations to support a trading hub?*
  - *Can potential trading participants can access these location?*



Key design components
Products

- A product is the definition of a commodity traded on an exchange.

- Standardised product terms include:
  - Delivery location
  - Gas quality and pressure specifications
  - Tenor / Delivery Period
  - Price and quantity parameters
    - Minimum, maximum, parcel size / tick size

- Example: Wallumbilla Gas Supply Hub
  - Products for three different locations.
  - Each location has a product for Balance-of-day, Day-Ahead, Daily and Weekly delivery periods.

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Key design components
Capacity Trading Arrangements

- What is needed?
  - Access to flexible, short-term capacity.
  - Compatible with the gas trading arrangements.
- What can pipeline operators / market provide?
  - Standardise terms and conditions
  - Matching of buyers and sellers
  - Settlement of transactions
  - Facilitate transfer of pipeline capacity from seller to buyer.
    - *Operational:* nominations & scheduling activities transferred to buyer. Settlement remains the obligation of the contracting shipper.
    - *Contractual*: transfer underlying pipeline contract for period of the transaction.
- Examples: PRISMA in Europe, developments underway in eastern states of Australia.
- Pipeline capacity release

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Key design components
Trading Mechanism Options

- Matching service:
  - Platform for bringing together buyers and sellers
  - Documentation, gas delivery and settlement all bilateral between the parties
- Auction
  - Periodic auction to form transactions between bids and offers.
  - Transactions in accordance with standard product terms.
- Continuous automated trading / exchange trading
  - Transactions formed continuously during the opening hours of the market.
  - Mechanism used by stock exchanges and gas trading hubs.
- Off-market
  - In combination with exchange trading, market could settle off-market transactions.

Key design components
Gas Delivery Options

- Transaction creates obligation to physically deliver gas.
- Bilateral v multilateral mechanism:
  - *Bilateral*: exchange operator provides details of counterparty and delivery quantity to participants. Participants arrange for the delivery of gas by making nominations to the relevant system operator/s.
  - *Multilateral:* exchange operator communicates transactions or net delivery volumes directly to the relevant system operator/s.
  - For transaction parties to remain anonymous the exchange operator must communicate (nominate) directly to the system operator on behalf of the trading participants.
- Gas delivery obligations can be netted across transactions by the operator.

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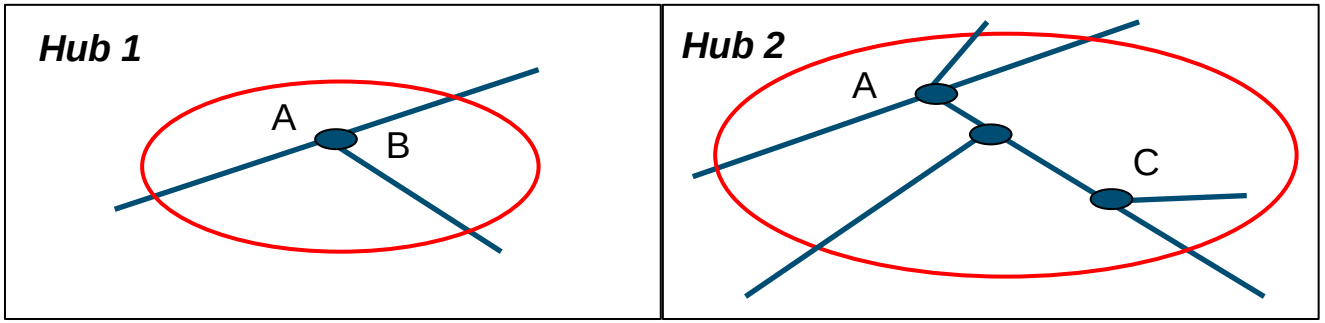
Key design components
Hub Services

- Hub services, while not compulsory, support the operation of the gas trading hub.
- Intra-hub transfer
  - Transfer gas across hub from seller to the buyer.
  - Requirements depend on the definition of the hub.



- Balancing service
  - Corrects imbalances caused by under / over delivery
  - Provides firmness of delivery
- Transfer title
- Storage, Park and Loan services

Key design components
Role of Operators

- Exchange operator
  - Responsible for developing, implementing, and running the market, including settlement and compliance.
- System operators
  - Run the pipelines and storage facilities
- Hub operator.
  - Depending on the design, a hub operator may be required.
  - Coordinate the scheduling of net gas deliveries, manage transfers and balancing of gas across a hub, allocate deliveries, track and validate title transfer.

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Key design components
Gas Demand Hubs

- A *demand hub* allows gas users and shippers to trade gas at the point of delivery to a distribution network.

- Design considerations relating to a demand hub include:
  - a distribution network can have multiple entry points and there can be limitations in moving gas within a distribution network.
  - the contractual arrangements for distribution customers typically differ from point-to-point contracts on transmission pipelines.
  - a dependency between pipeline allocation processes and distribution network allocation processes which favours making participation compulsory for shippers and users so that all data is captured.

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Key design components
Settlement and Prudential

- Bilateral settlement
  - Settlement between transacting parties in accordance with a master agreement.
  - Collateral and credit risk monitoring also managed bilaterally.

- Centralised settlement
  - Net settlement across all transactions for billing period.
  - Lodge collateral with the market rather than duplicate with potential counterparties.
  - Exchange operator monitors exposure and manages collateral. Avoids duplication by participants.

Key design components
Governance

- Market rules
  - Can be established under a suite of regulatory instruments including an Act, Regulations and Rules, or
  - Alternatively they can take the form of a participant agreement.
- Consider change control process.
- Role of monitoring compliance and enforcing market rules.
  - Trading hubs generally have market conduct rules similar to financial markets.

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Key design components
Interactions with other Processes

- Electricity market
  - Firmness of products
  - Trading hours of market
  - Scheduling requirements in the WEM
  - Day type and other conventions
- Existing contracts
  - Market sits alongside existing GSAs.
  - Consider impact on existing transportation agreements.
- Security of supply
  - Market provides tool for signaling and managing tight demand and supply.
  - Consider interaction between market and system operations.
- Retail gas market
  - Trading hub not expected to have an impact on retail gas market.
  - New supply source for retailers and end users.

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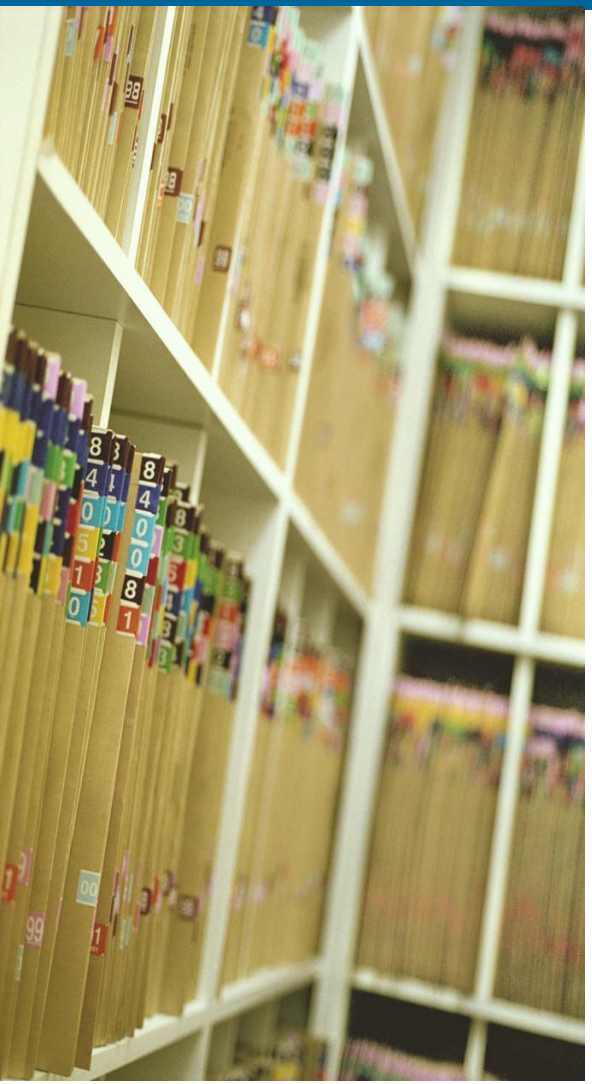
Key design components
Information Requirements



- Provide information to participants to support trading operations:
  - confirmation that orders have been received and confirmation of trades,
  - acknowledgement of actual gas deliveries,
  - settlement statements/invoices and supporting information (where the exchange operator is involved in settlement).

- Publish market prices and aggregate traded quantities

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Key design components
Funding the Market

- Implementation costs include:
  - Trading system
  - Settlement and prudential system
  - Market rules and product specifications
  - Market readiness activities
- Options for funding the market
  - Compulsory fee on shippers
  - Membership and transaction fee
  - Sponsorship by market participants

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Questions