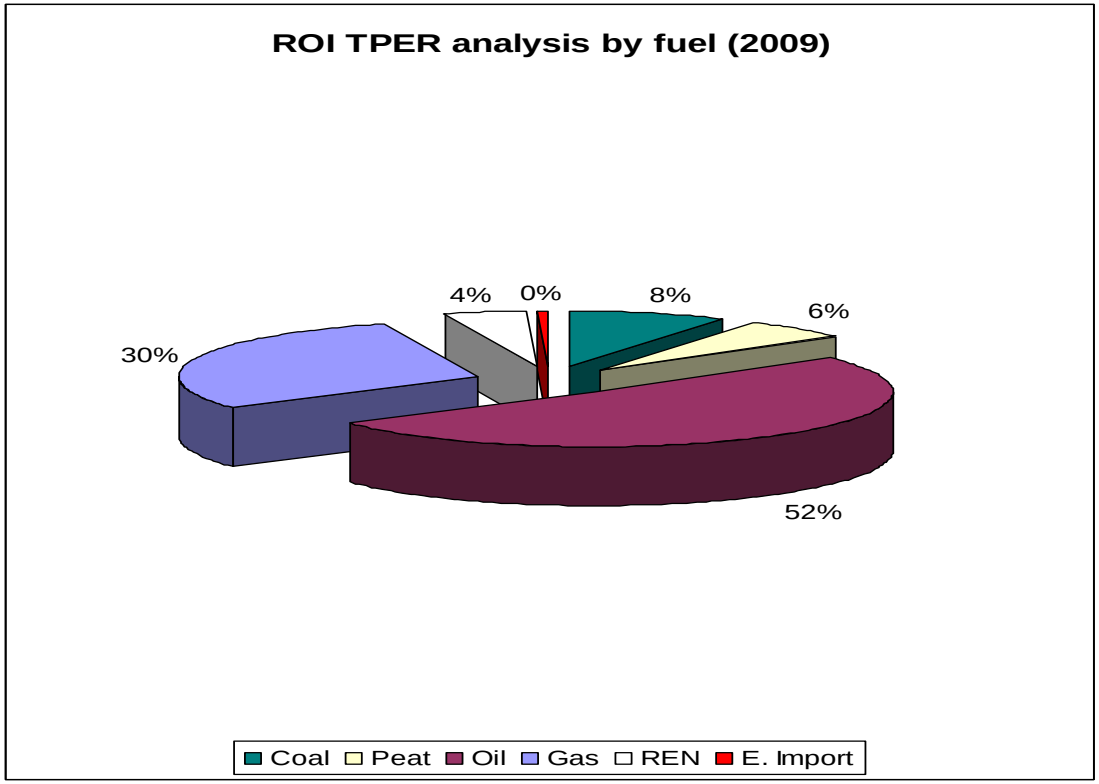
Energy Resilience
Mitigating Against Gas Supply Disruption

PRESENTATION OVERVIEW

- Overview
- Infrastructure
- Policy
- Natural Gas Emergency Plan

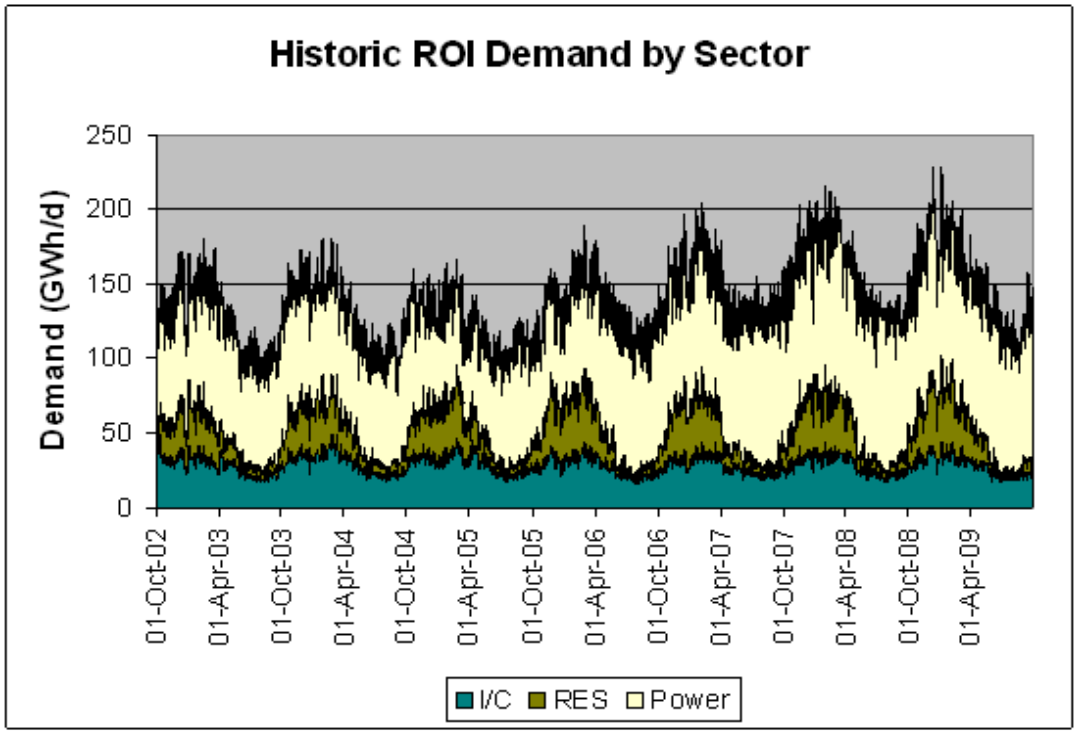
ROI Annual Energy Demand

Natural Gas continues to make an important contribution to overall ROI energy – mix and accounts for approximately 30% of ROI Total Primary Energy Requirement (TPER)



Gas Usage by Sector

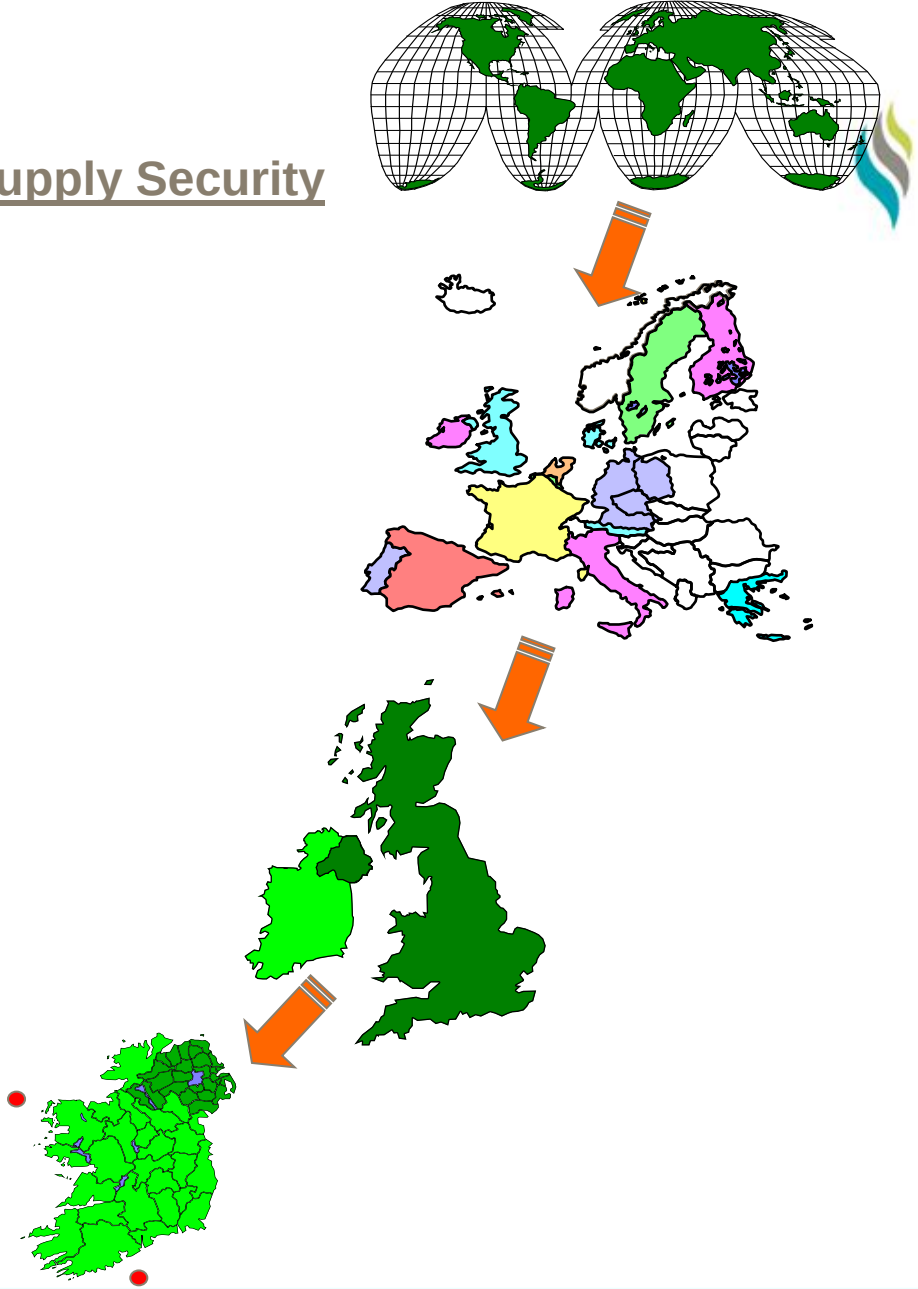
Power Generation	66%
Industrial/Commercial	19%
Residential	15%



INFRASTRUCTURE

The Components of Natural Gas Supply Security

- International
  - Level of Reserves
  - Distances to EU
- EU
  - Physical Networks
  - Markets and Policies
- Irish and UK
  - Markets and Policies
  - Physical Networks
- Irish
  - Physical Links
  - Sources of Production



Europe has a highly developed infrastructure for delivering gas to the markets...

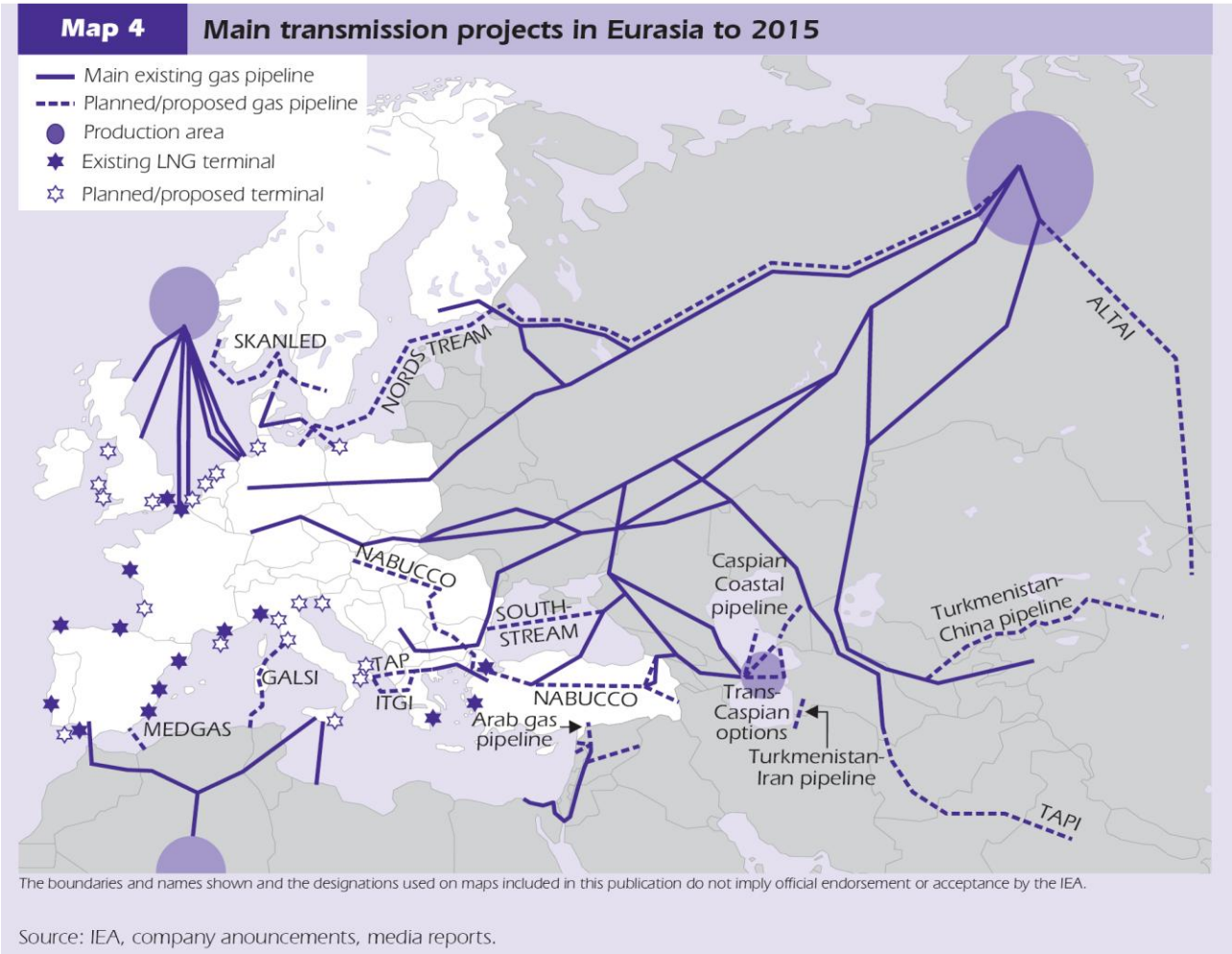
Networks – Delivering Secure, Sustainable and Competitive European Gas Supplies

- **Europe's Gas Networks are a key component to delivering secure, sustainable and competitive European and to Irish gas supplies.**

- **Key reserves that will supply Europe's future gas needs are outside of the EU. Therefore, we need:**
  - Pipeline interconnection between Europe and the producing countries.
  - The development of LNG export and import capability.
  - Enhanced Interconnectivity within Europe.

- **However, there are other factors that are also important:**
  - Relationships between EU countries on security and emergency planning are also critical to secure supplies.
  - And an efficient "single gas market" is necessary to underpin competitive supplies.

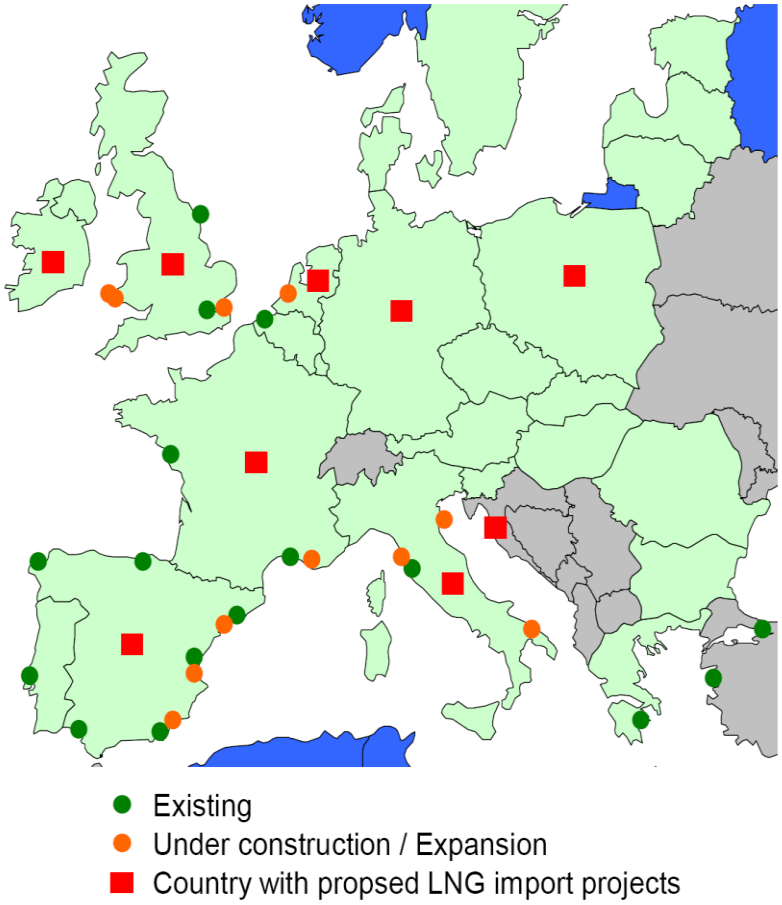
Unprecedented New Infrastructure Projects Connecting Europe to Asia, Mid East and African Gas Resources …



And Europe is building new LNG terminals to take advantage of the growing LNG supplies …

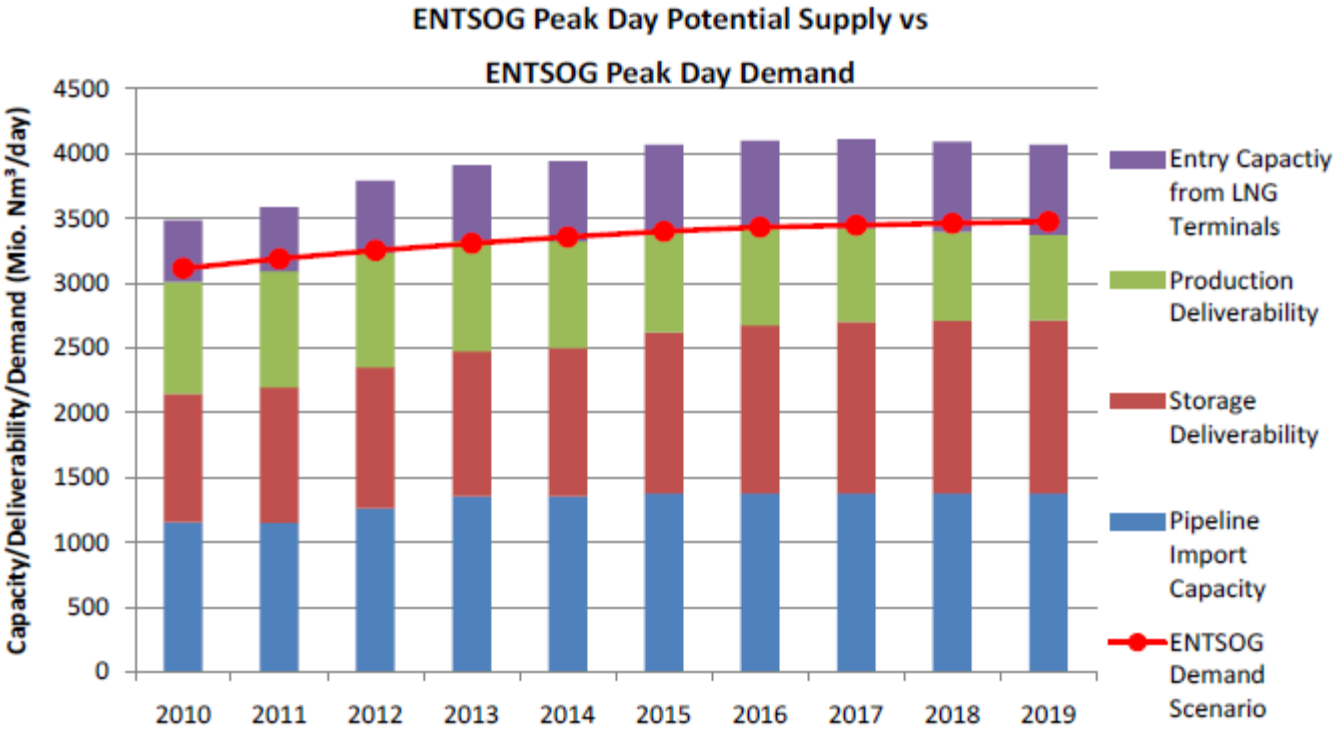
FIGURE 4.5F – European terminals under construction

Source: Various



An appropriate LNG capacity consisting of LNG terminals and ship-based regasification should be made available to all Member States, either directly or through other Member States on the basis of a security sharing arrangement.

European Supply and Demand



Great Britain

92% of Gas consumed in Ireland is supplied from Great Britain.

Recent GB Gas Security of Supply study undertaken by Poyry for Department of Energy and Climate Change (DECC) concluded that Britain's current and expected gas infrastructure is sufficient to meet all but the most extreme supply failures.

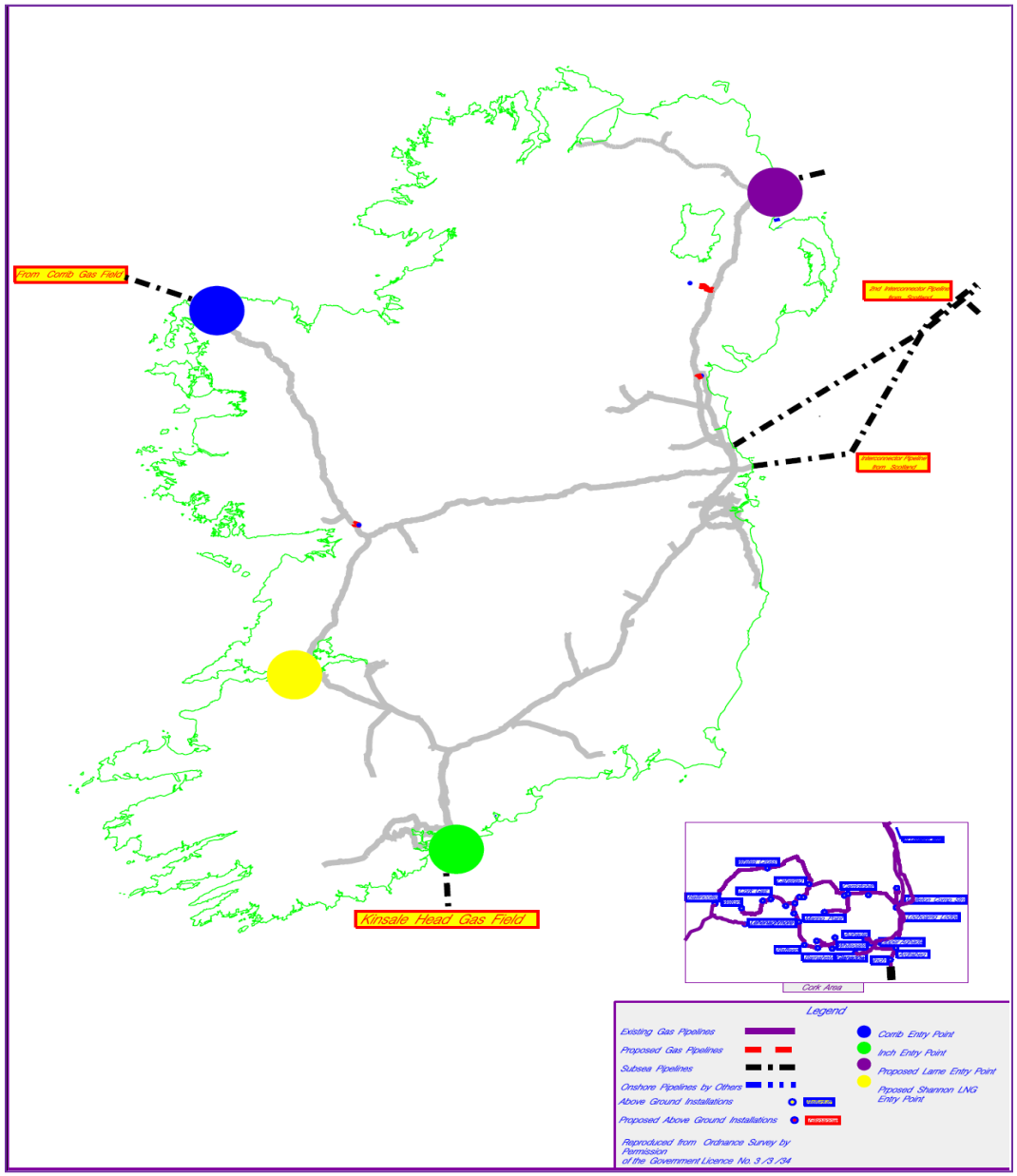
Britain has sufficient capacity and diversity of supply to meet demand.

Ireland

Overview of the ROI Transmission System

- Two Interconnectors
- Reliable and well maintained Transmission System
- Designed for 1 in 50 Winter
- Designed to ensure continuity of supply

- *Existing and potential future sources of ROI supply*



Performance of system during Cold Weather spell January 2010

- Record gas demand for the Republic of Ireland (ROI) market on the Thursday 7th and Friday 8th January 2010
- Highest ever recorded daily gas demand for the ROI market of 23 mscm/d on Thursday 7th January, which was driven by:
  - Extremely cold weather, with average temperature of -5.1 C at Dublin Airport (temperatures never rose above -3.0 C)
    - This drove the gas demand of Non Daily Metered (NDM) sector, i.e. the residential & small I/C sectors that primarily use gas for space heating
  - Also extremely high demand from the power generation sector, which was driven by a combination of:
    - Record peak-demand on the electricity system of 4,950 MW; *and*
    - Very low levels of renewable electricity generation, with only 83 MW generated on the peak-hour from 1,300 MW of installed wind-capacity
- The peak-day gas demand on 7th January was 9.5% higher than the corresponding peak for the previous 2008/09 gas year

Performance of the Gas Network

- Overall the gas transmission and distribution systems performed very well during the cold weather:
  - The gas transmission system met all peak-day demands without major incident; *and*
  - The gas distribution system also performed very well with only minor localised issues arising

- There was sufficient capacity on the Interconnector (IC) system and at Inch to maintain ROI supplies during the severe weather
  - Record flow of 19.7 mscm/d through the two subsea interconnectors.
  - IC2 ensured that there was sufficient import capacity available to meet the increased gas demand (and maintain supplies to power sector)
  - Balance of demand was provided by Inch storage and production gas from PSE Kinsale Energy
- There was sufficient gas available at both Moffat and Inch:
  - National Grid issued a number of Gas Balancing Alerts (GBA), due to the unplanned losses of Norwegian gas supplies
    - Norwegian production was also affected by the severe weather
  - The market responded by increasing LNG and continental pipeline imports, and also curtailing supplies to interruptible customers

POLICY
EU Security Of Supply Directive

- **Background**

- EU Directive on Security of Natural Gas Supplies (2004/67/EC):
  - Requires each member state to define the roles and responsibilities of all market participants & to prepare emergency plans.
  - Create arrangements to coordinate EU response to gas emergency
  - Requires member state to at least protect residential sector from:
    - **Partial loss of national supplies for a period to be determined by each member state** and certain defined extreme weather events.
      - Member states may extend this to other sectors as well

- The EU Directive was transposed into Irish Law by SI 697:
  - Commission for Energy Regulation (CER) is now responsible for monitoring & protecting the security of Irish gas supplies.
  - The CER has already taken steps to enhance security of supply:
    - Established the Task Force on Emergency Procedures (TFEP)
    - Appointed Gaslink to act as National Gas Emergency Manager (NGEM)

Proposed new Regulation of the European Parliament and of the Council covering measures to safeguard security of gas supply and repealing Directive 2004/67/EC

Given the importance of gas in the EU energy mix, the regulation aims at demonstrating to gas customers that all necessary measures are taken to ensure their continuous supply, particularly in case of difficult climate conditions and in case of disruption.

Components:

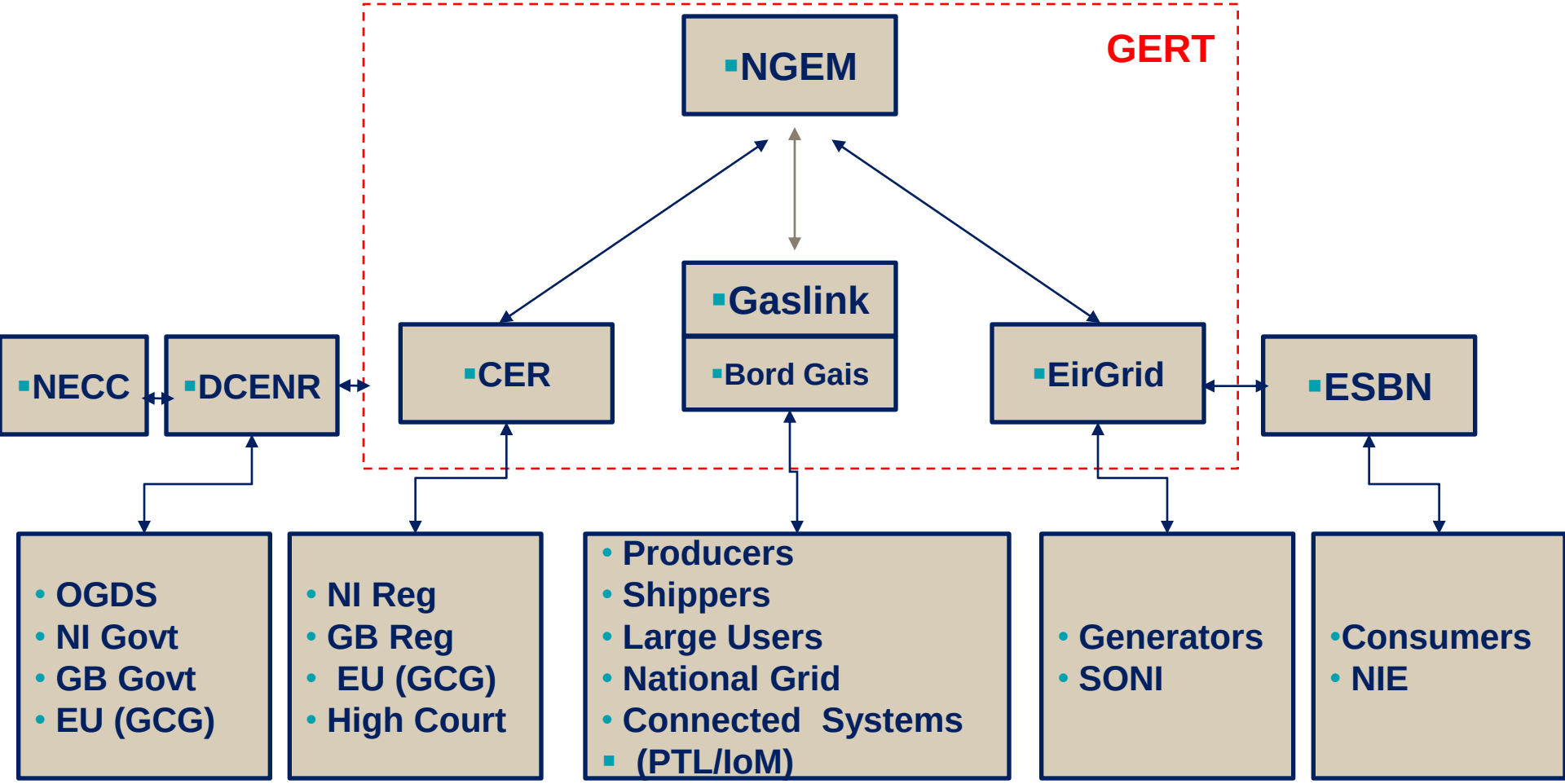
- Risk Assessment
- Preventive Action Plan
- Infrastructure Standard
- Supply Standard

Natural Gas Emergency Plan - SI 697

- **S.I. requires that the NGEP shall include:**
  - **Provisions for the licence holder to declare a gas emergency**
  - **The arrangements and appointment of a Natural gas Emergency Manager (NGEM) b the CER**
  - **Measures to ensure that domestic customers, small & medium enterprises and gas customers who can't switch to other energy sources are protected in a gas emergency**
  - **Arrangements are in place to protect the electricity system in so far as it is dependant on gas**
  - **Roles and Responsibilities of CER/National Gas Emergency Manager (NGEM)**
  - **Roles and Responsibilities of each class of energy undertaking**

Natural Gas Emergency Plan

Emergency Response Framework



Network Gas Supply Emergency Arrangements –Emergency Steps

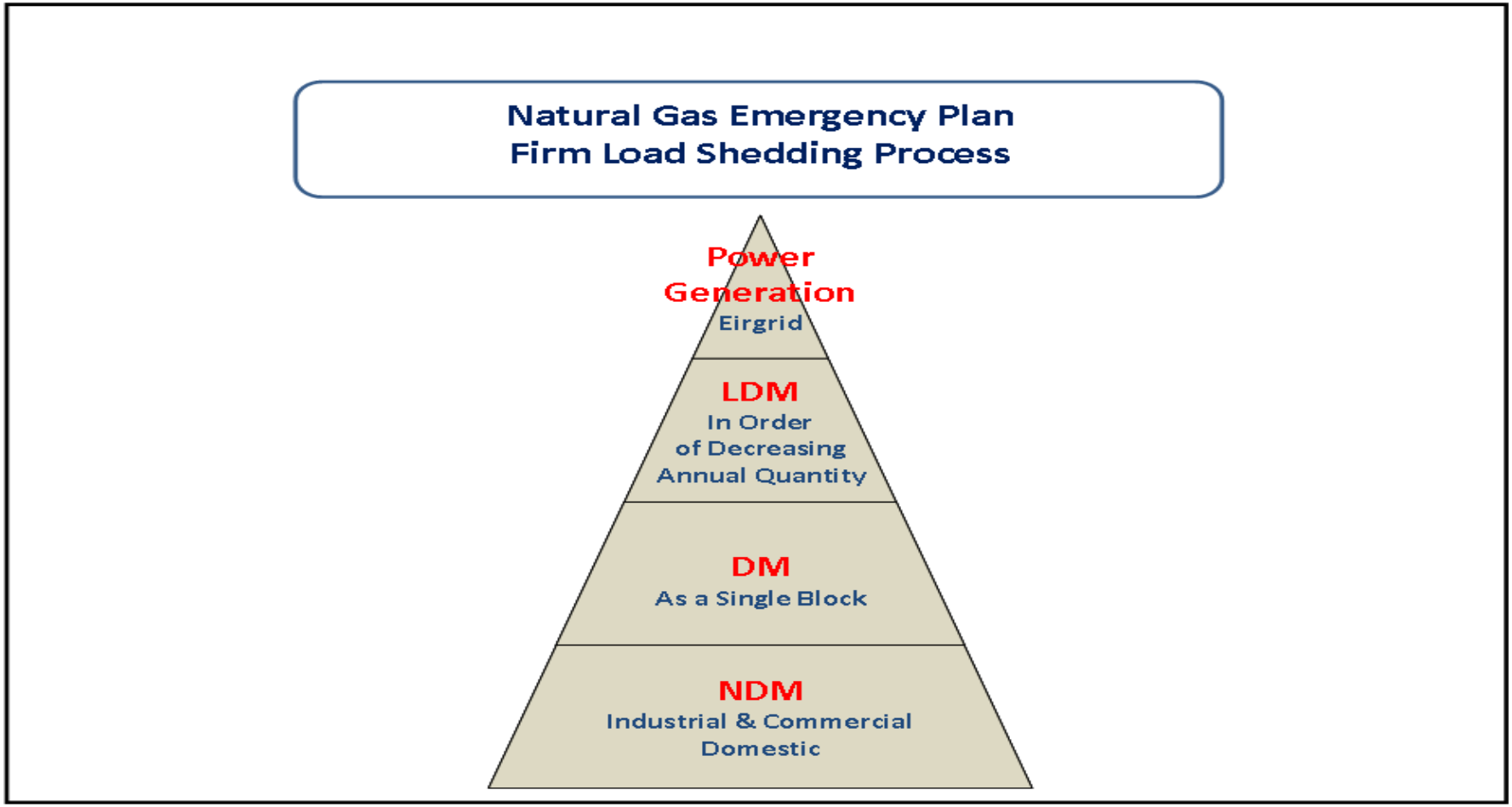
The NGEM coordinates all parties affected by the emergency. There are five steps responding to a potential gas supply emergency on the gas supply network.

GAS SUPPLY EMERGENCY STEPS

STEP 1	**Declaration of Potential Emergency** Seek voluntary maximisation of supplies Seek voluntary load reduction Interrupt storage injection
STEP 2	**Declaration of Actual Emergency** Formal declaration of an emergency by the NGEM Formal request for maximisation of gas supplies
STEP 3	**Firm Load Shedding** Power Generation Large Daily Metered Consumers Daily Metered Consumers Non Daily Metered & Domestic Appeal
STEP 4	**Allocation & Isolation** Allocation of available gas supply Isolation of networks as necessary
STEP 5	**Restoration** Notification of end of emergency Progressive restoration of supplies Note: the NGEM can implement restoration at any point in the emergency

Load Shedding

The following diagram shows the order of demand reduction in the event of a gas supply emergency.



THANK YOU