Capacity Prices and Supply & Demand Balancing Options

Gas TCMF

6th November 2008

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Introduction

The Charging Methodology states that a supply and demand match is achieved by reducing supplies in a merit order to match the forecast demand.

Analysis for GCM05, presented at the July 2008 Gas TCMF, highlighted some exit price volatility in areas close to supply points at the top of the supply merit order.

This presentation compares the entry and exit capacity prices generated under the current merit order approach and six potential alternative approaches.

Issues to consider include whether we are seeking to find the approach that produces the least volatile entry and exit prices or that which most closely reflects operational reality.

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Supply and Demand Scenarios

◆ **GCM05 Demand Scenarios - 2012/13 Transportation Model**

◆ **Demand scenarios**

   ➢ As-is (Firm only)
   ➢ Demand Scenario 1 (forecast firm demand plus DC interruptible)
   ➢ Demand Scenario 2 (forecast firm demand plus DC & DN interruptible)

   N.B. Demand Scenario 3 from GCM05 not used in this analysis as it used the same supply and demand information as scenario 2 but with a higher IUK booked capacity

◆ **Supply data taken from 2007 Ten Year Statement**

◆ **Current merit order approach and six alternative approaches considered**

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Supply and Demand Balancing Rules - Options

Rule 1: Supplies ranked by Merit Order as per prevailing methodology

Rule 2: All supplies multiplied by equal percentage reduction to meet demand

Under Rules 3 – 7, each supply group is fully utilised in order. The supplies in the last required group are multiplied by an equal percentage reduction to meet demand.

Rule 3: Supplies split into three groups:

1. Beach, Interconnectors, LNG Importation, Long-Range Storage (Rough)
2. Mid-Range Storage
3. Short-Range Storage (LNG)

Rule 4: Supplies split into three groups and utilised as follows:

1. Beach, Interconnectors, Long-Range Storage (Rough), Mid-Range Storage
2. LNG Importation
3. Short-Range Storage (LNG)

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S&D Balancing Rules - Options

Rule 5: Supplies split into two groups and utilised as follows:

1. Beach, Interconnectors, Long-Range Storage

2. LNG Importation, Mid-Range Storage, Short-Range Storage (LNG)

Rule 6: Supplies split into two groups and utilised as follows:

1. Beach, Interconnectors, LNG Importation, Long-Range Storage (Rough)

2. Mid-Range Storage, Short-Range Storage (LNG)

Rule 7: Supplies split into two groups and utilised as follows:

1. Beach, Interconnectors, Long-Range Storage (Rough), Mid-Range Storage

2. LNG Importation, Short-Range Storage (LNG)

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Analysis

◆ **Calculated entry and exit prices for the three demand scenarios under the seven rule options**

◆ **Calculated the range of prices across the three demand scenarios for all entry and exit points under each rule**

◆ **The following two graphs show, across the three demand scenarios under each rule:**

– The average price range across the three demand levels for all entry and exit points
– The maximum price range for an entry/exit point
– The standard deviation of price ranges

◆ **Appendix A contains graphs showing the average exit prices for each Distribution Network and the Direct Connects under each rule. The final graph in Appendix A shows the average exit prices for Wales and the West as this area experienced the highest price variation in the GCM05 analysis.**

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Example

The below table contains the exit prices (p/kWh/day) for three example exit points analysed under Rule 1:

	As-Is	Scenario 1	Scenario 2	Price Range
Exit Point 1	0.0046	0.0018	0.0006	0.0040
Exit Point 2	0.0001	0.0001	0.0001	0.0000
Exit Point 3	0.0061	0.0055	0.0073	0.0018

The average price range is 0.0019 p/kWh/day
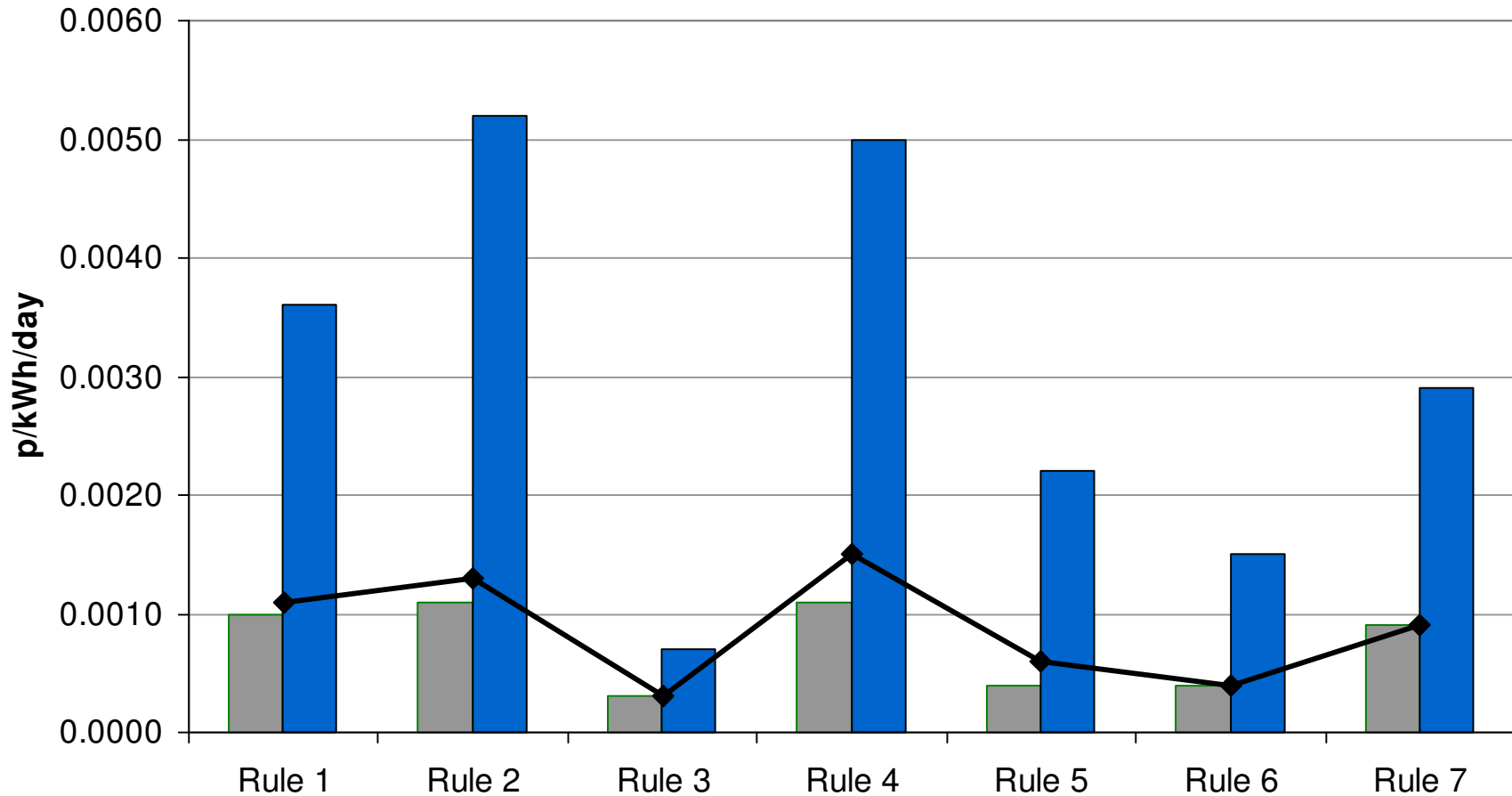
The maximum price range is 0.0040 p/kWh/day

The standard deviation of the price range is 0.0020 p/kWh/day

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Impact of S&D Balancing Options on Exit Price Variation
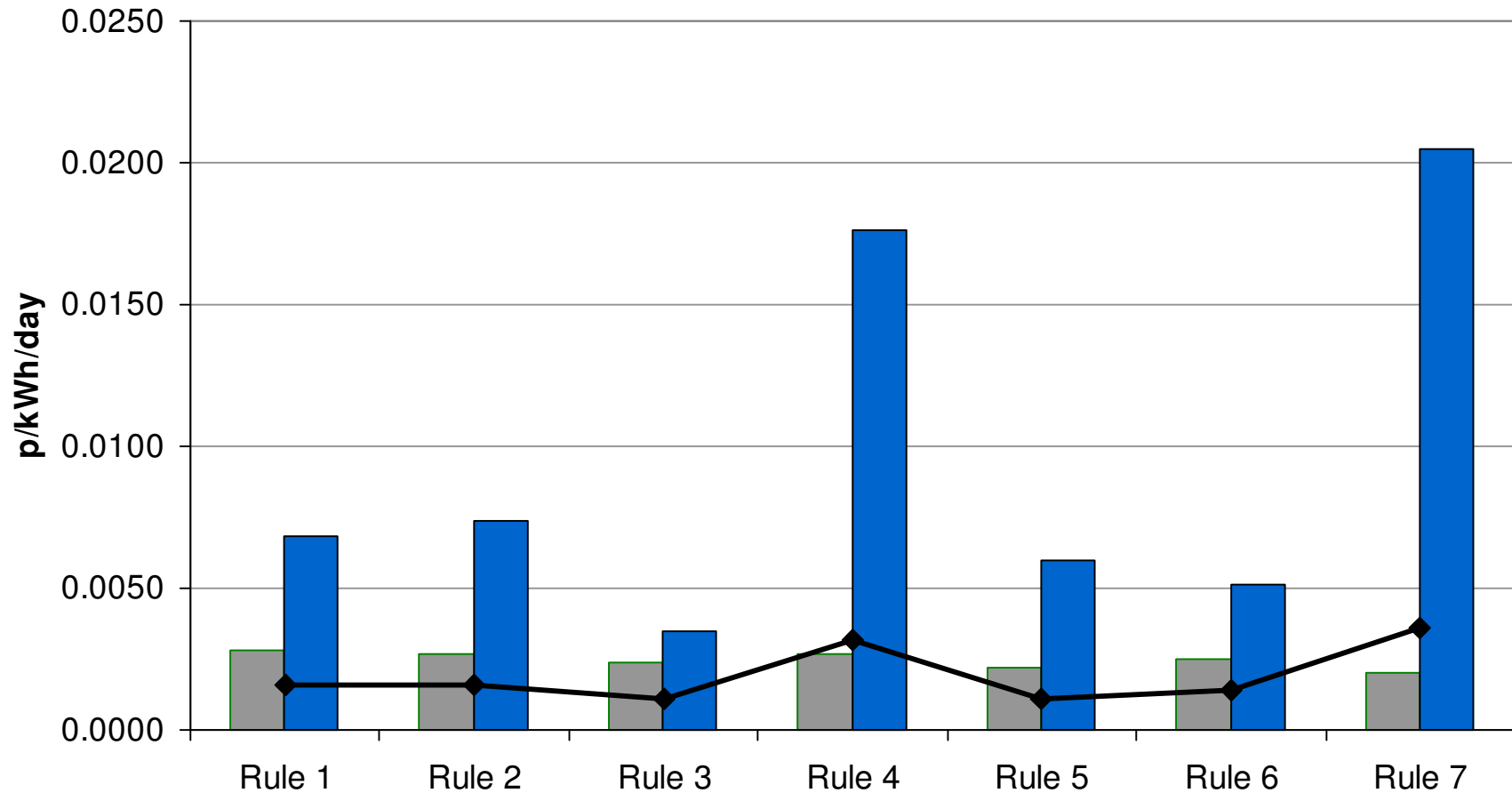
Impact of S&D Balancing Options on Entry Price Variation

Results

➢ **Rule 3 produces the least variable entry and exit prices across the three scenarios.**

    ➢ **Rule 3: Supplies split into the following three groups:**

    1. Beach, Interconnectors, LNG Importation, Long-Range Storage (Rough)
    2. Mid-Range Storage
    3. Short-Range Storage (LNG)

However, the supply/demand scenarios used in this analysis have not required the use of LNG Storage under Rule 3.

➢ **Rule 6 could produce more stable prices in scenarios with more demand variation.**

    ➢ **Rule 6: Supplies split into the following two groups:**

    1. Beach, Interconnectors, LNG Importation, Long-Range Storage (Rough)
    2. Mid-Range Storage, Short-Range Storage (LNG)

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Summary and Next Steps

◆ **Exit Prices will vary as a consequence of demand changes but changing the supply and demand balancing rules could minimise the impact of supply changes on exit price variation**

◆ **Further analysis**

— More supply options

— Different Transportation Models – 2009/10, 2010/11

◆ **Discussion Paper or Consultation Paper?**

◆ **Potential timeline**

— Discussion Paper 2nd February 2009

— Discussion Report?

— Consultation Report and Indicative prices (150 days notice) 1st May 2009

— Prices published 1st August 2009

— Implement 1st October 2009

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Appendix A

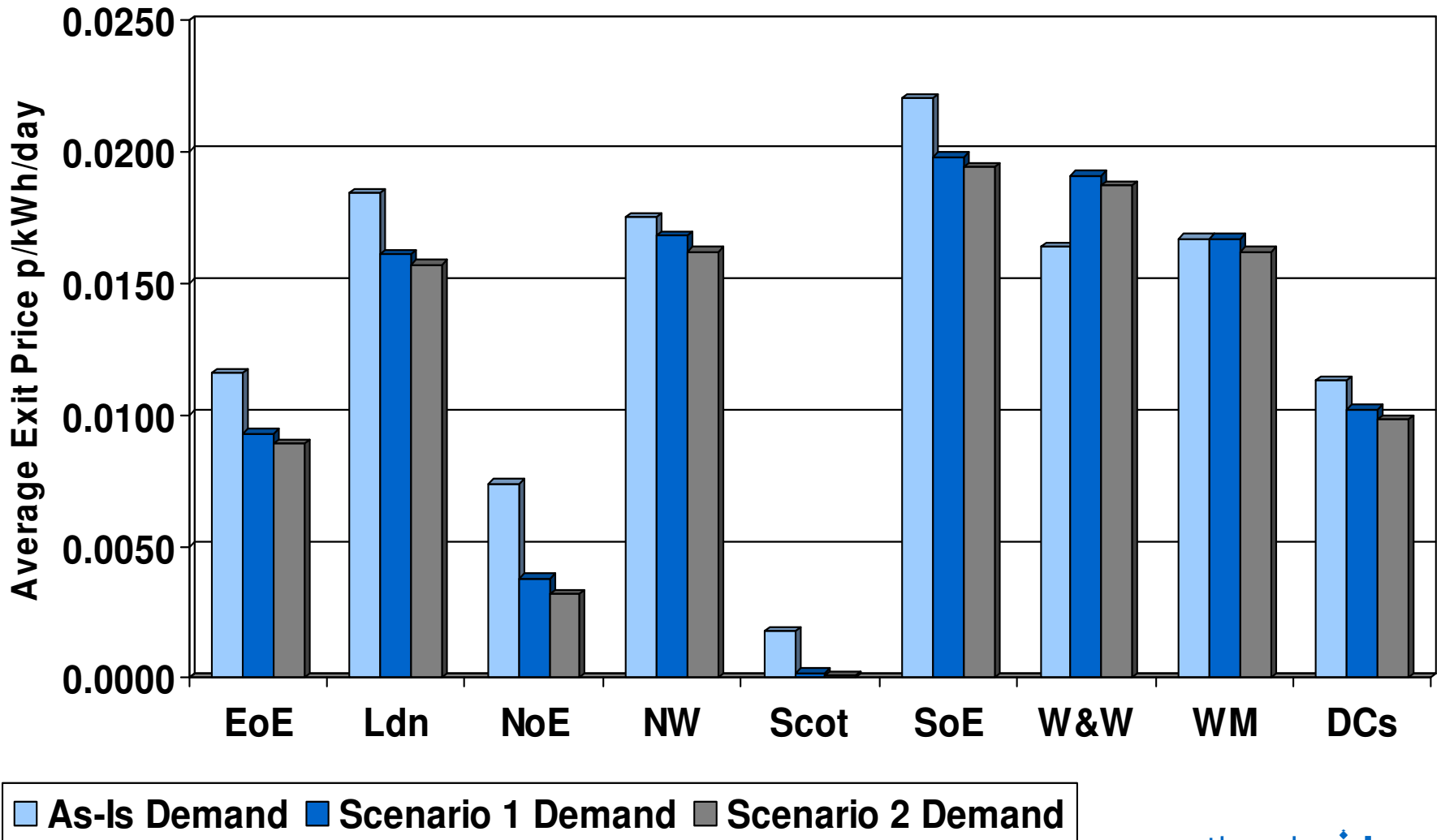**The following graphs show the average exit price for the following groups under each rule:**

- East of England
- London
- North of England
- North West
- Scotland
- South of England
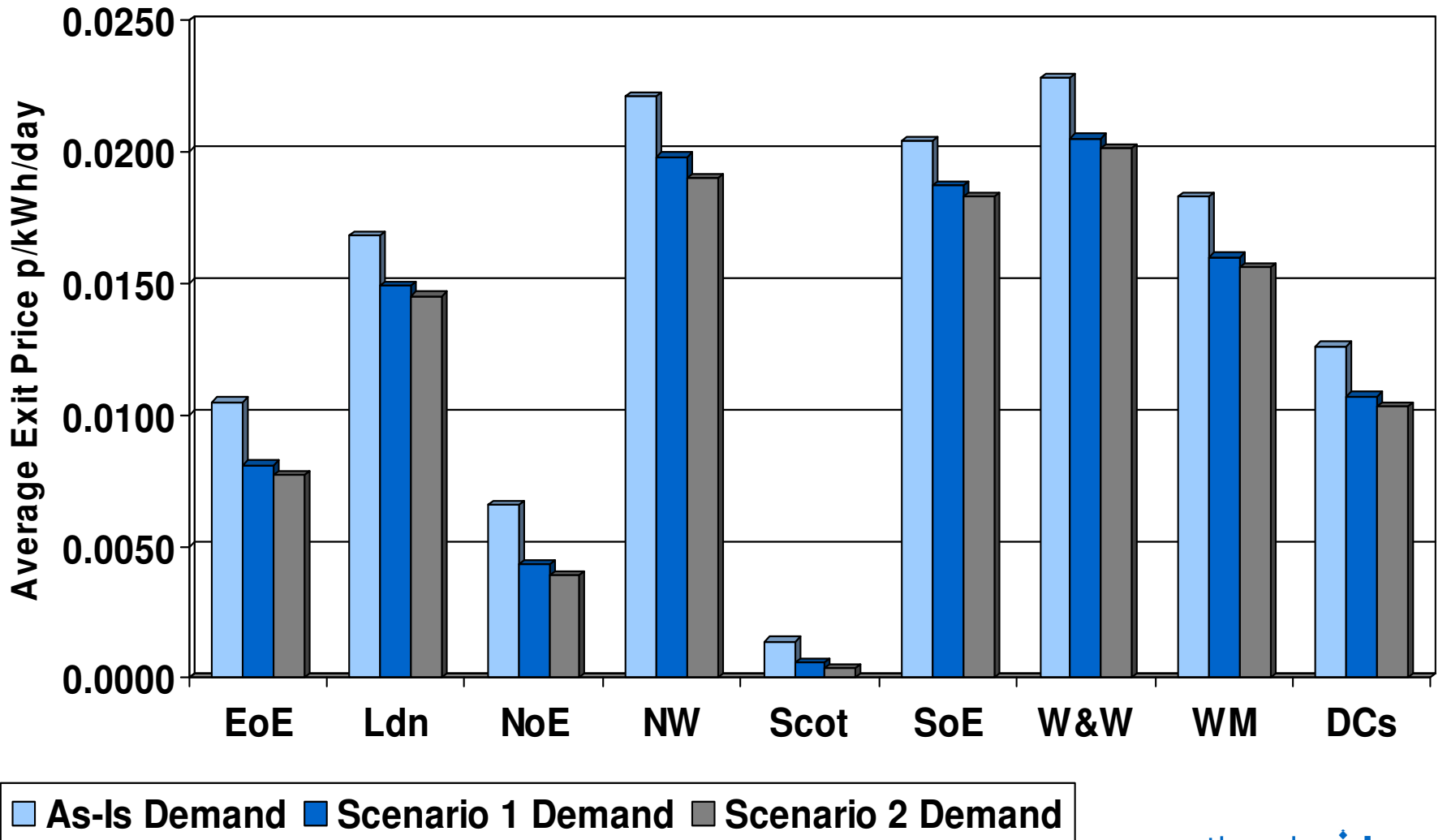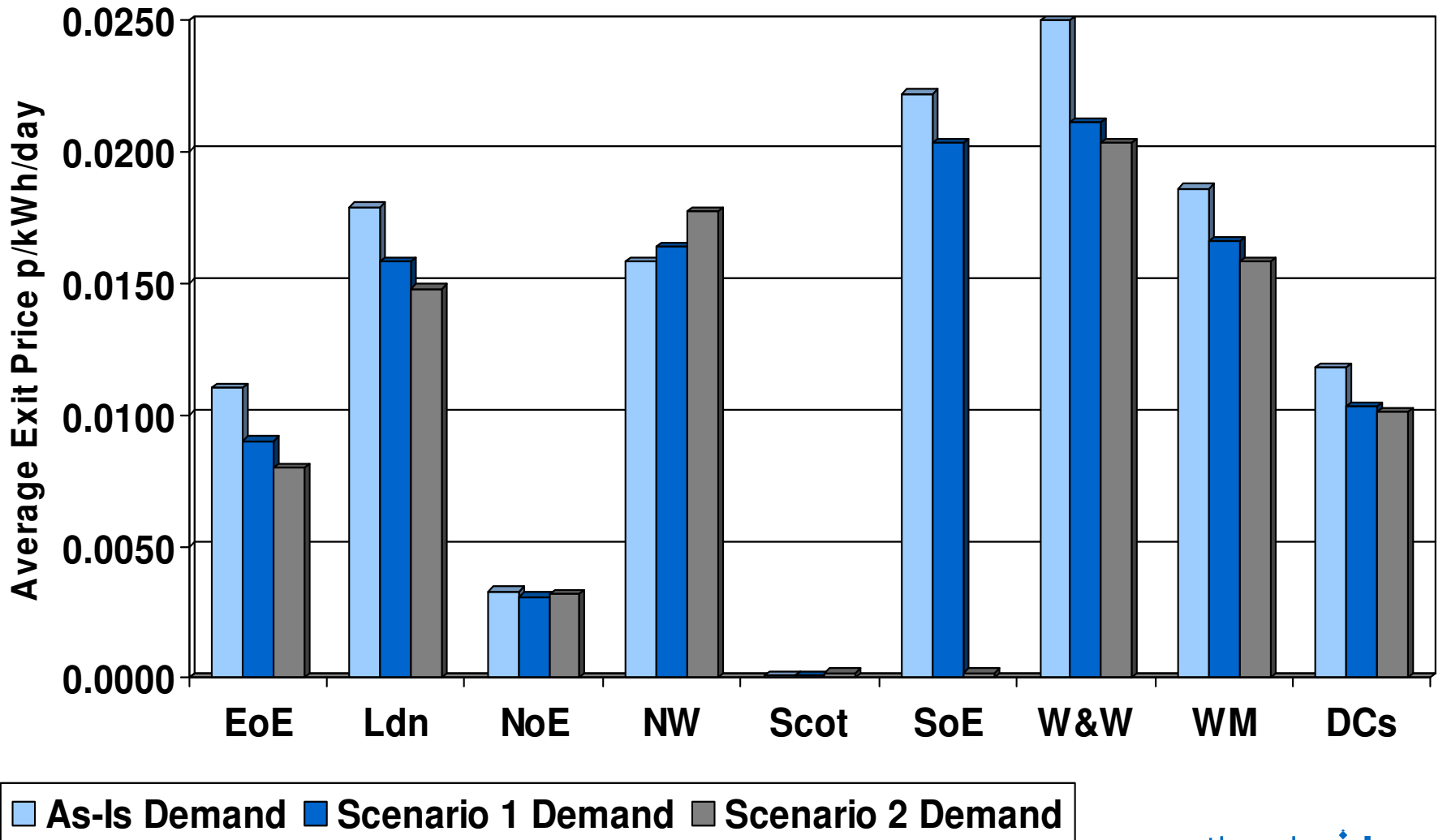- Wales and West
- West Midlands
- Direct Connects

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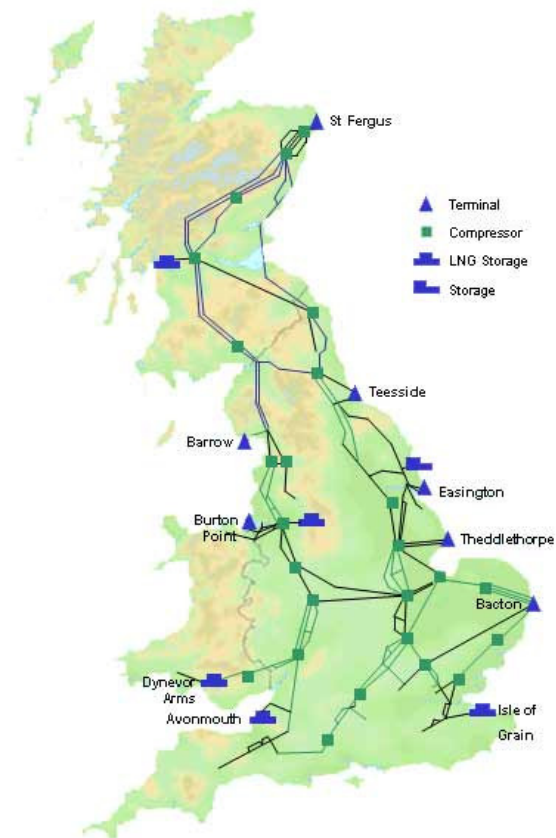
Average Exit Prices: Rule 1

Average Exit Prices: Rule 2

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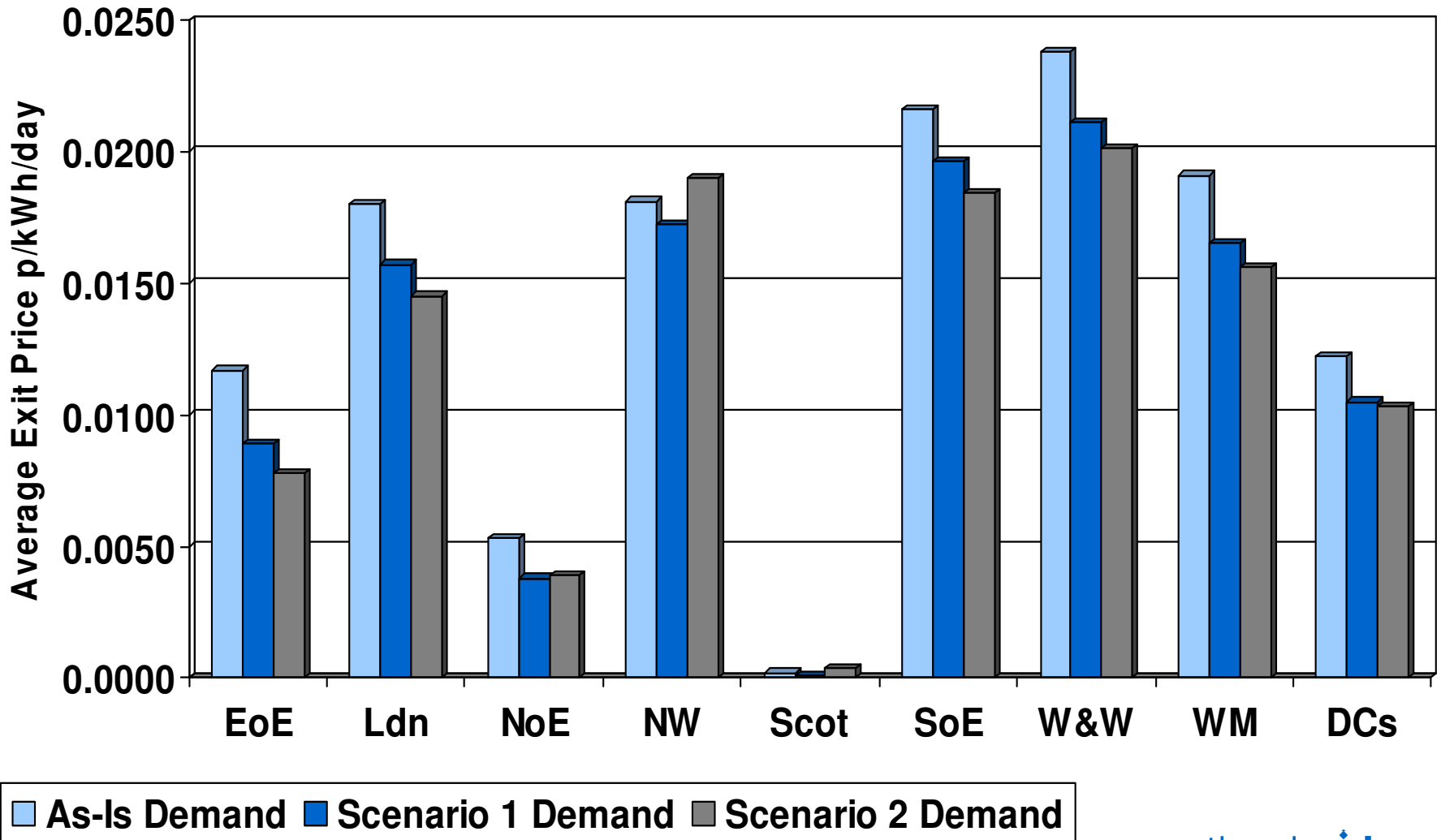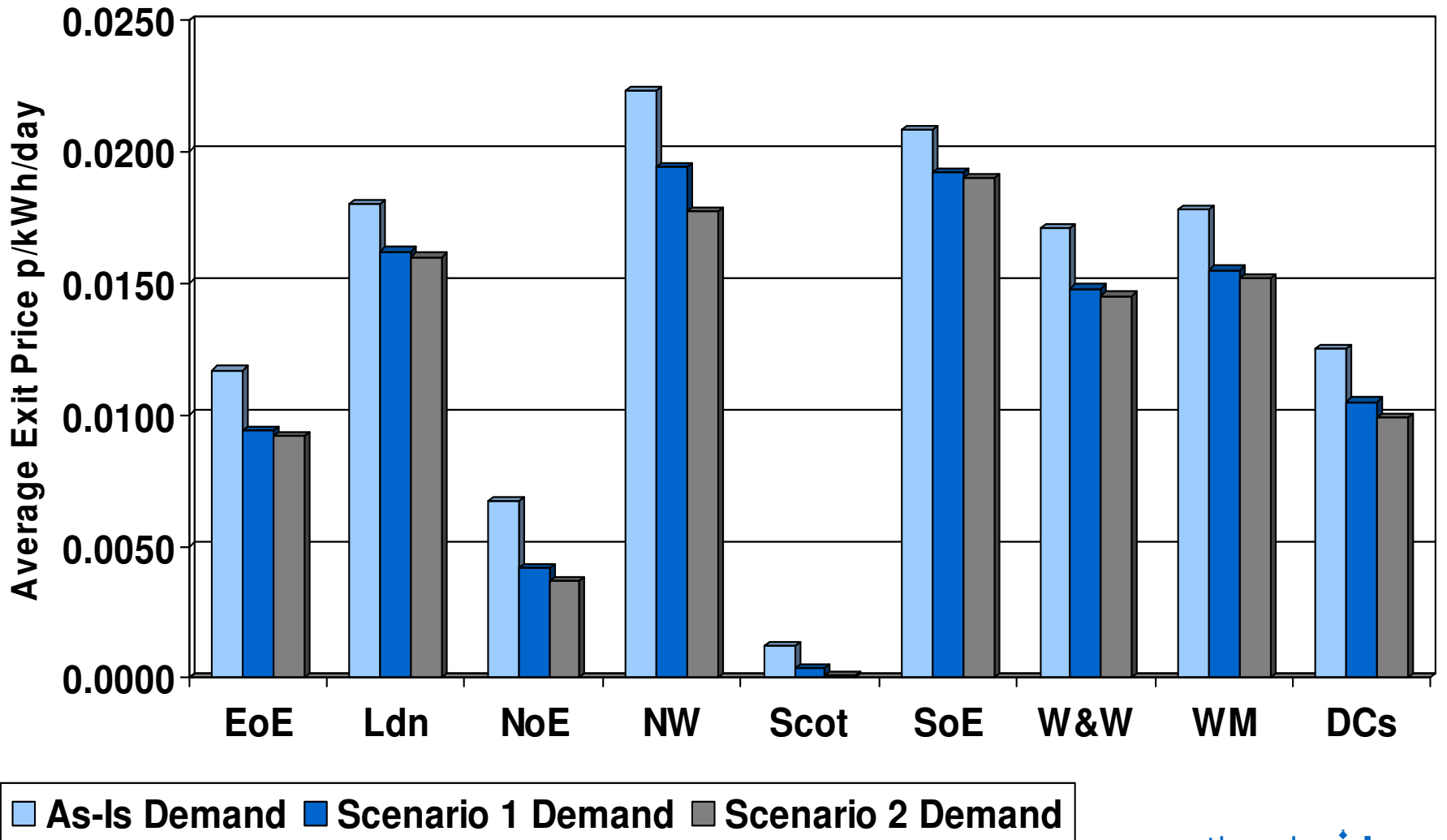
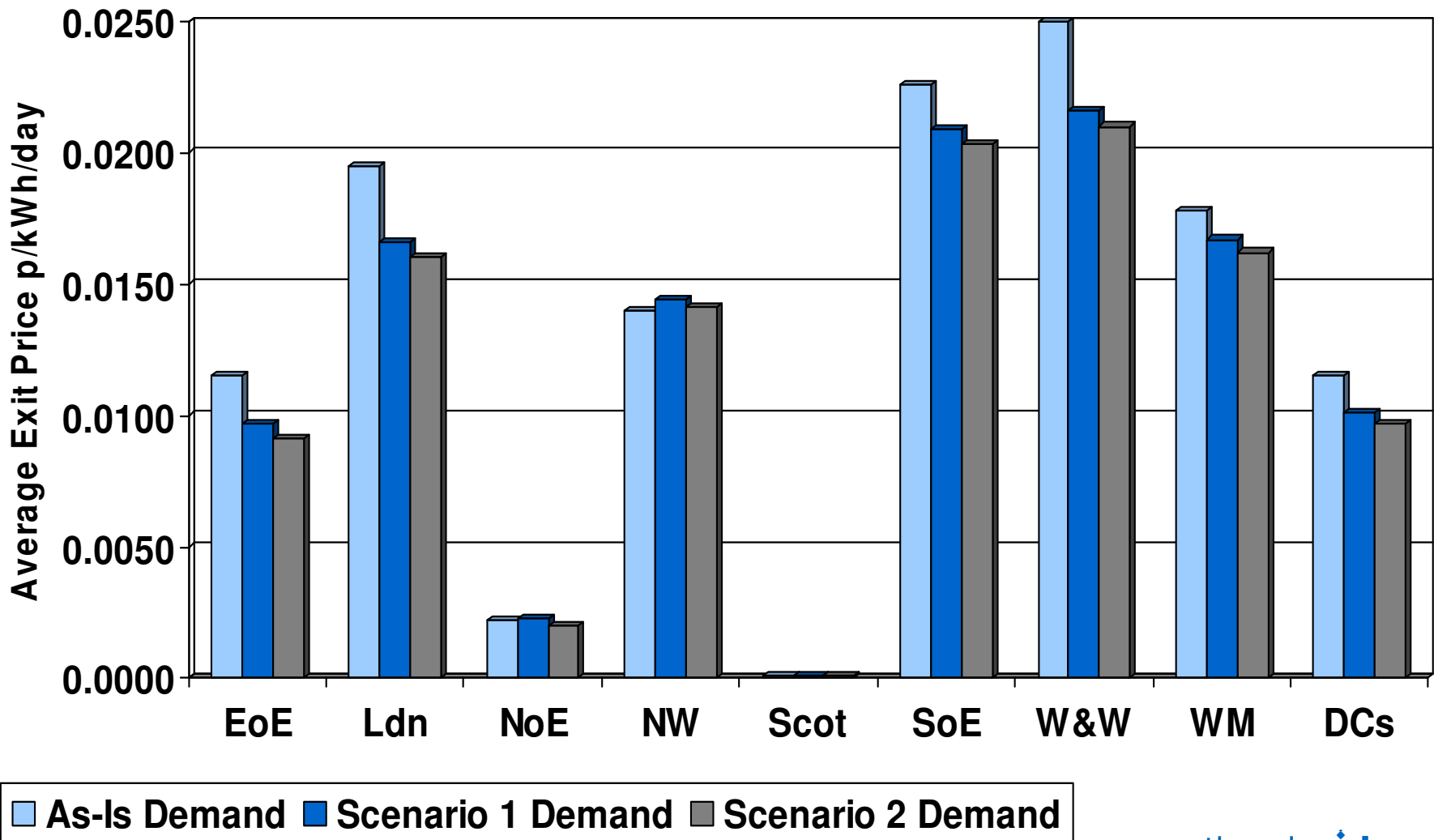Average Exit Prices: Rule 3

Average Exit Prices: Rule 4

Average Exit Prices: Rule 5
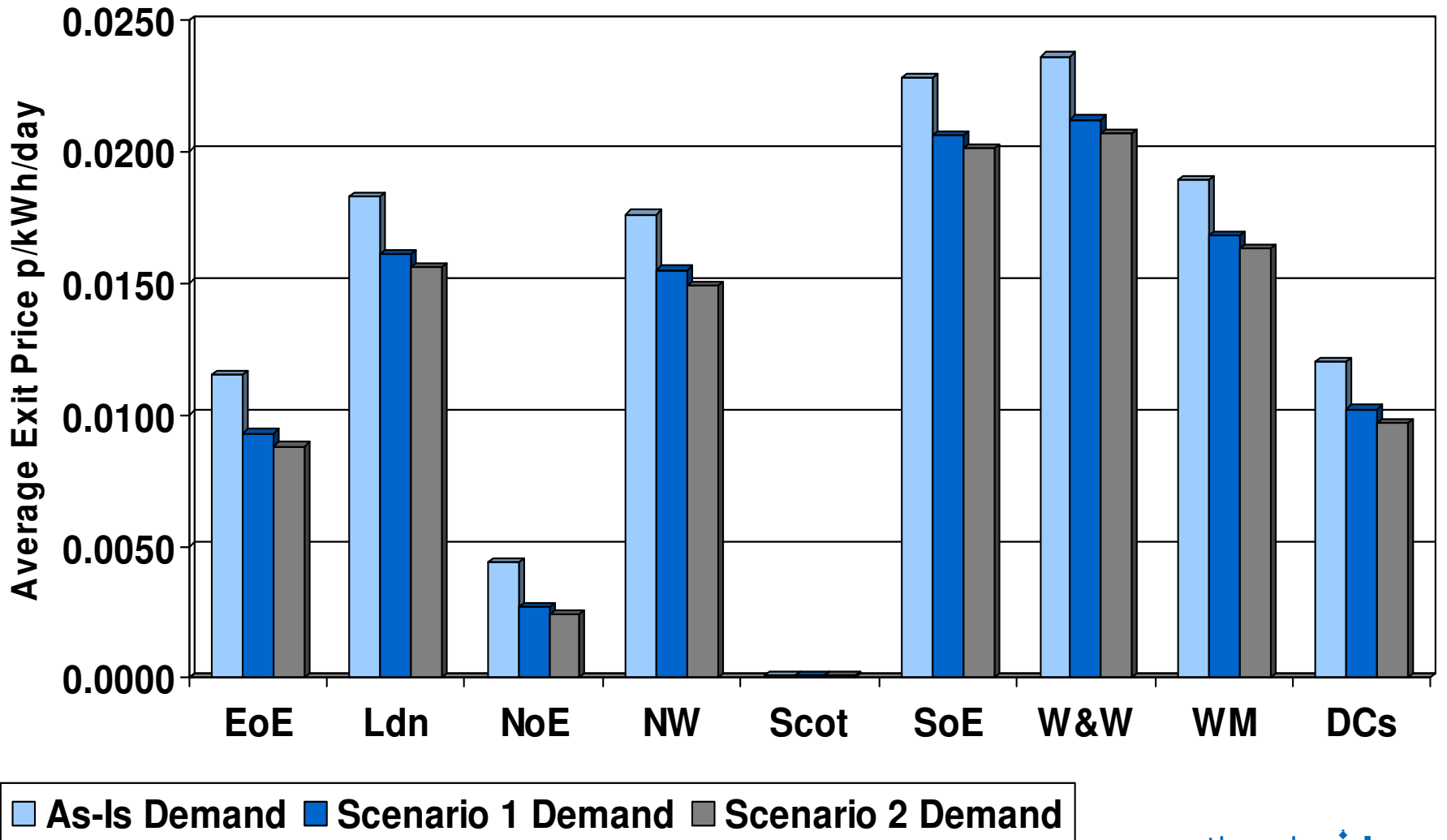
Average Exit Prices: Rule 6

Average Exit Prices: Rule 7

Wales and the West: Average Exit Prices