Capacity Prices and Supply & Demand Balancing Options

Gas TCMF

8th January 2009

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Introduction

At the 6th November 2008 Gas TCMF we presented analysis that compared the NTS entry and exit capacity prices generated under the current merit order approach for balancing supply & demand within the Transportation Model and six potential alternative approaches.

Issues discussed included 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.

Three options were discarded.

Introduction

Entry and exit capacity prices are governed by how far gas has to travel through the NTS; the further it travels the higher the price will be.

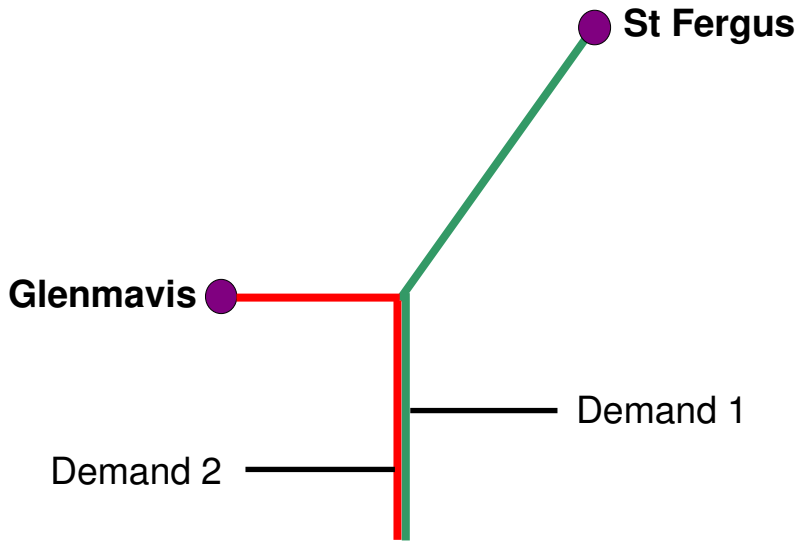
The most effective way of maintaining stable prices would be to ensure the location and volume of supplies did not change from year to year – this is obviously unrealistic.

Using supply data that steadily increases / decreases at storage ASEPs each year (i.e. using an equal percentage of supply from each ASEP) to match an increase / decrease in demand should produce more stable prices.

However, changes to the supply and demand data in the Transportation Model have the potential to change the direction of the flow of gas and this is likely to noticeably impact prices.

Introduction

Using LNG storage will affect prices as the storage sites are located in areas with no / few other supplies. This means 'turning on' LNG will impact on how far gas from other supply points flows into the system. For example, if Glenmavis is flowing, gas from St Fergus will not be absorbed by demand points so quickly, and will therefore flow deeper into the system. This will make the St Fergus gas more expensive than it would be if Glenmavis wasn't flowing.



Supply and Demand Scenarios

November '08 Analysis

- **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**

Supply and Demand Balancing Rules - Options

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

Under Rules 3, 5 & 6, each supply group is fully utilised in order. Each of the supplies in the last required group is scaled down by an equal percentage.

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 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)

Analysis

- **Calculated entry and exit prices for the three demand scenarios under each rule**
- **Calculated the range of prices across the three demand scenarios for all entry and exit points under each rule**
- **The following entry & exit 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

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**

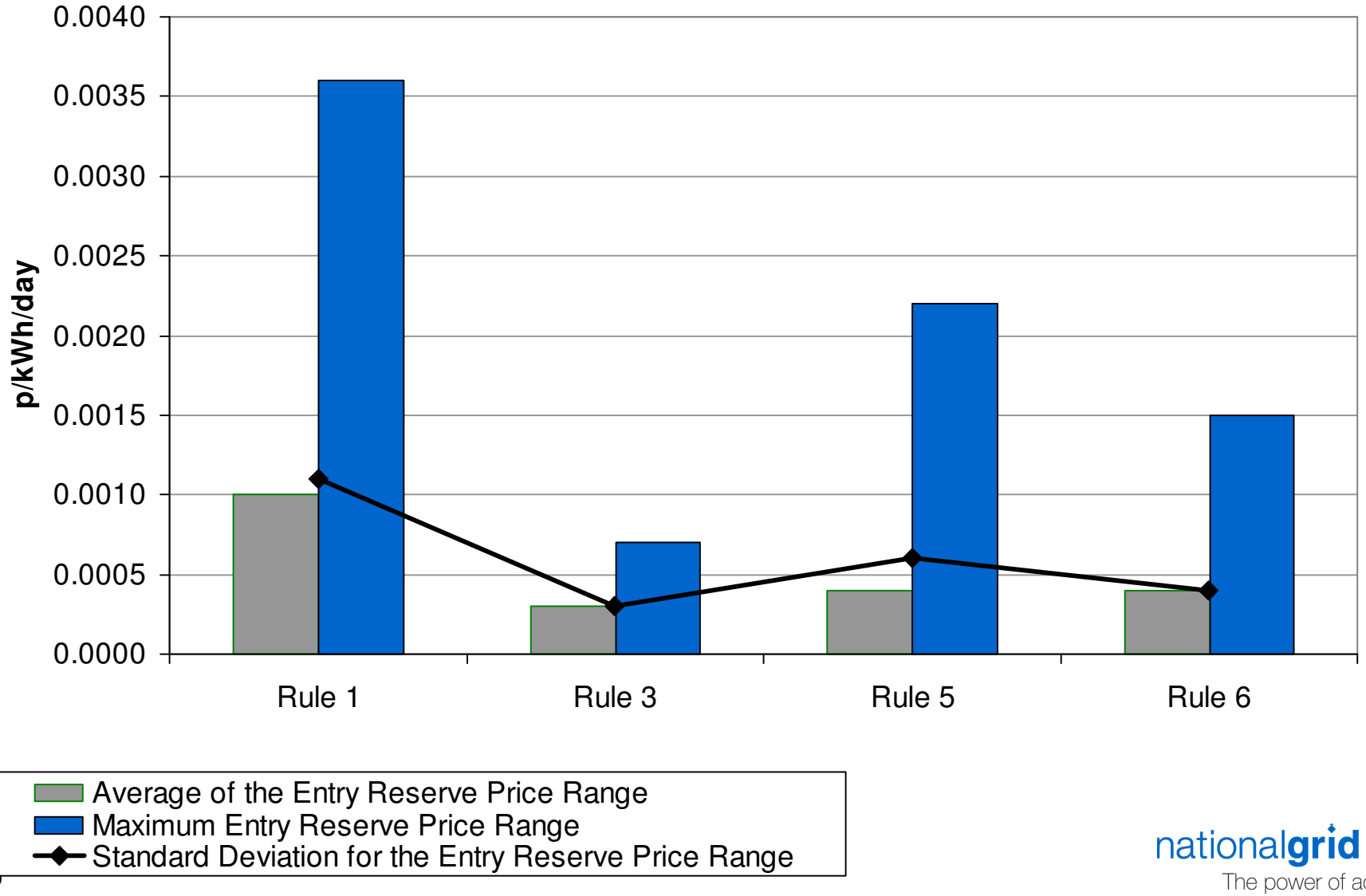
The average price range is 0.0019 p/kWh/day

The maximum price range is 0.0040 p/kWh/day

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

Impact of S&D Balancing Options on Entry Price Variation

November '08 Analysis



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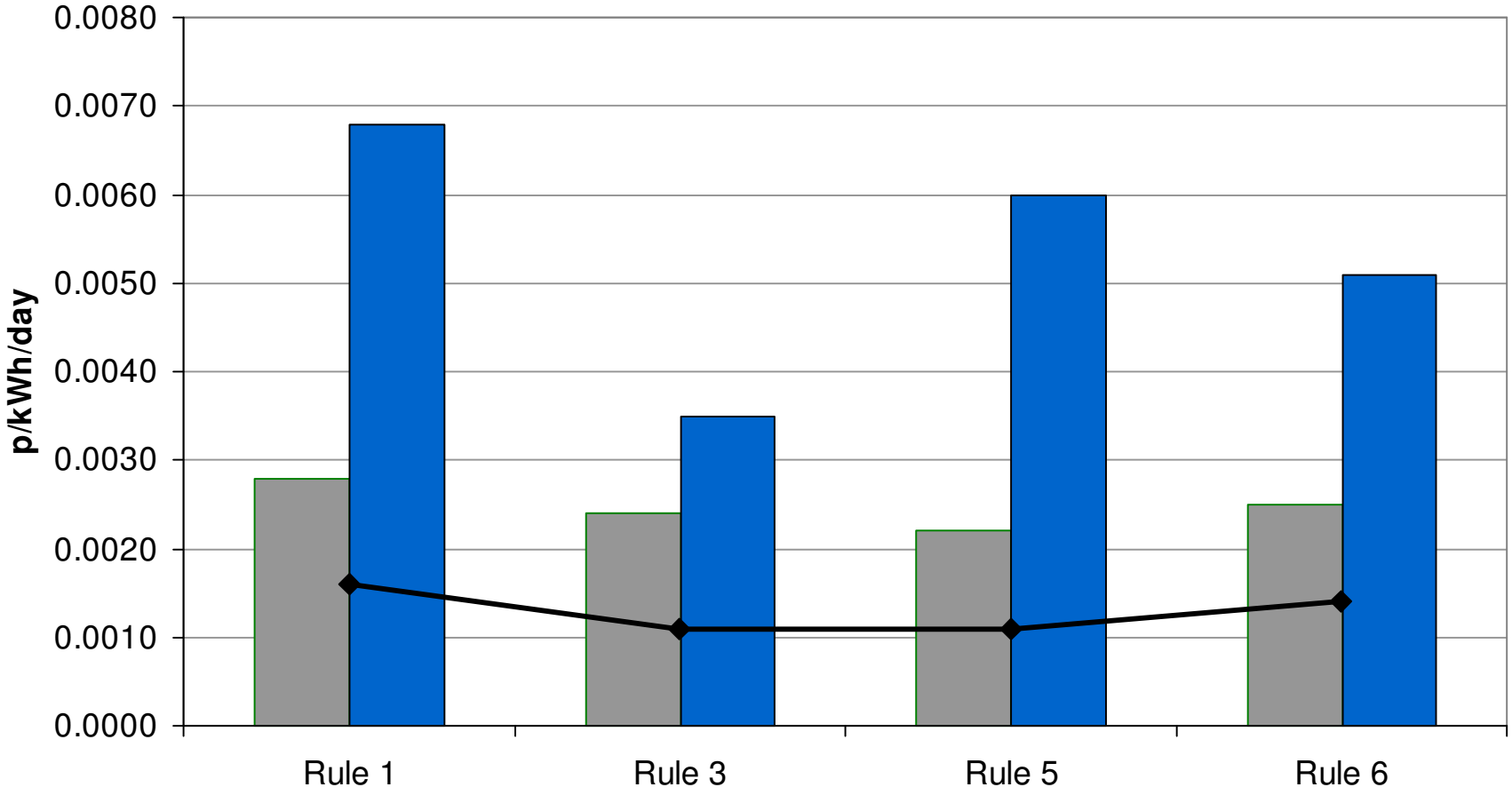
Impact of S&D Balancing Options on Exit Price Variation

November '08 Analysis



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Results

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- **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)

Further Analysis

- **Following the concerns raised by Ofgem regarding GCM05 and the direction for implementation of UNC 0195AV (to be confirmed) further analysis has been carried out**

- **The revised GCM05 proposal, where exit prices would be adjusted to collect TO allowed revenue from the baseline (rather than the booked) level of capacity with the costs associated with unsold baseline being commoditised should lead to more stable exit prices as the level of baseline capacity should be more stable (and predictable) than the level of booked capacity.**

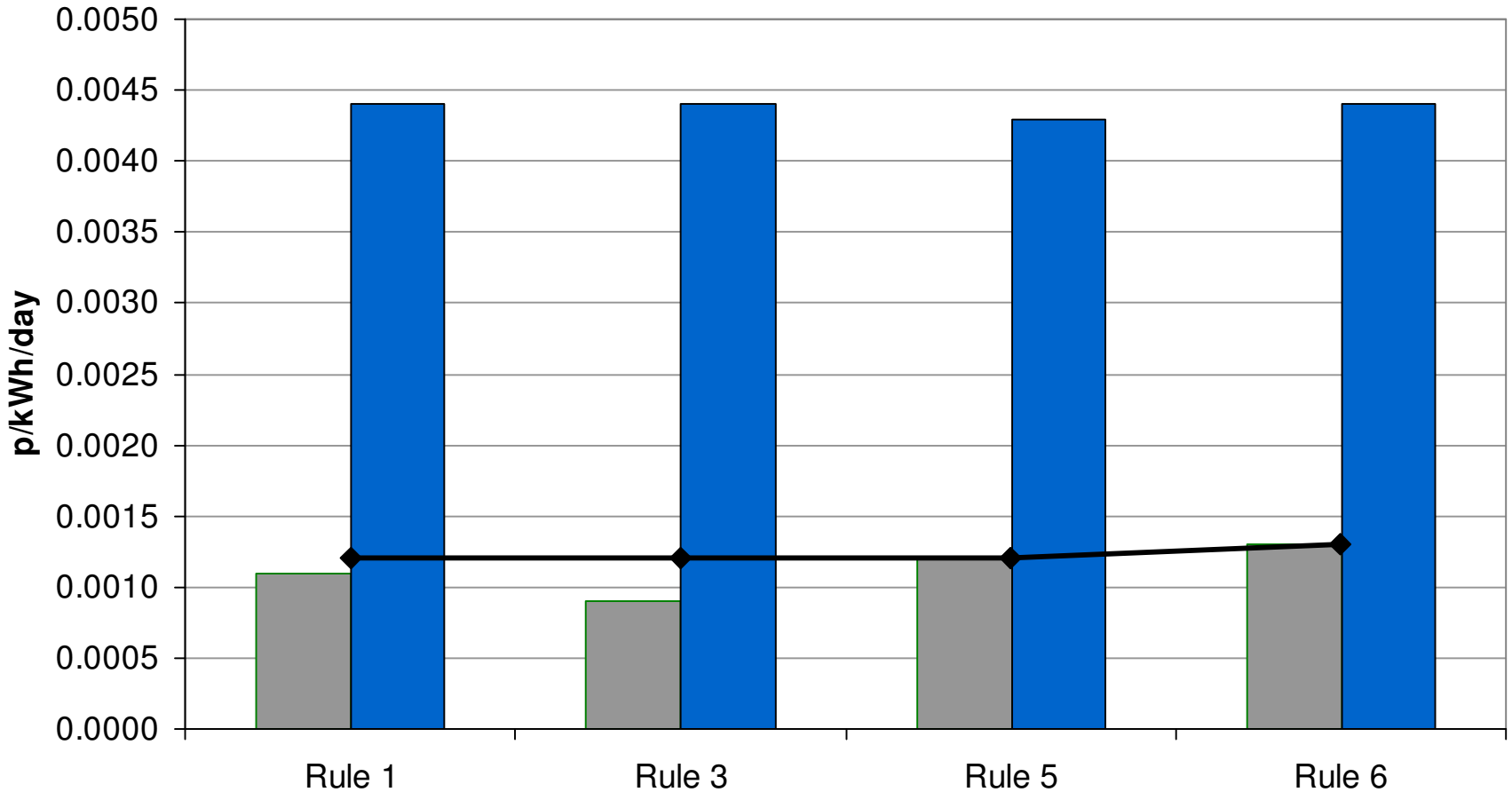
Supply and Demand Scenarios

January '09 Analysis

- **Three years modelled – 2012/13, 2013/14, 2014/15**
- **Baseline Exit Demand from Licence**
- **Supply from December 2008 Ten Year Statement for 2012/13, 2013/14 and 2014/15**

Entry Capacity Price Variation across years 2012/13, 2013/14 and 2014/15 (using 2008 TYS)

January '09 Analysis



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Exit Capacity Price Variation across years 2012/13, 2013/14 and 2014/15 (using 2008 TYS)

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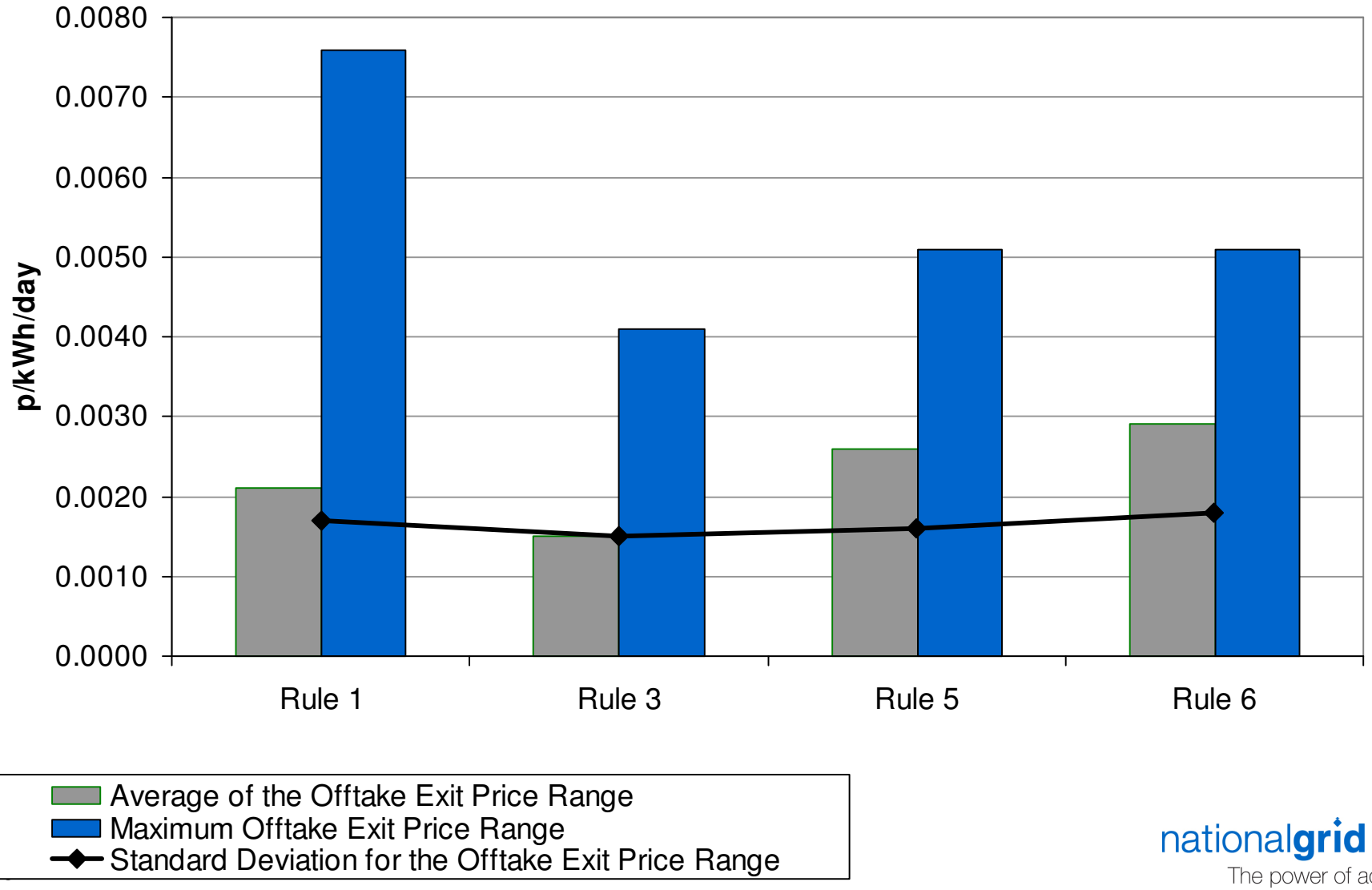

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Summary

Reasons for moving away from the prevailing methodology:

- **Matching demand by turning on supply points one by one (merit order) can produce variable prices which may not appropriately reflect underlying costs.**

- **When LNG storage is required to match the demand level it is likely to impact on entry and exit prices in the surrounding area.**

- **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**

Considerations for a new methodology:

- **The methodology must be cost reflective.**

- **Is it more important to have a methodology that is operationally realistic or that produces the lowest price variation?**

- **A more transparent approach could be of benefit.**

Next Steps

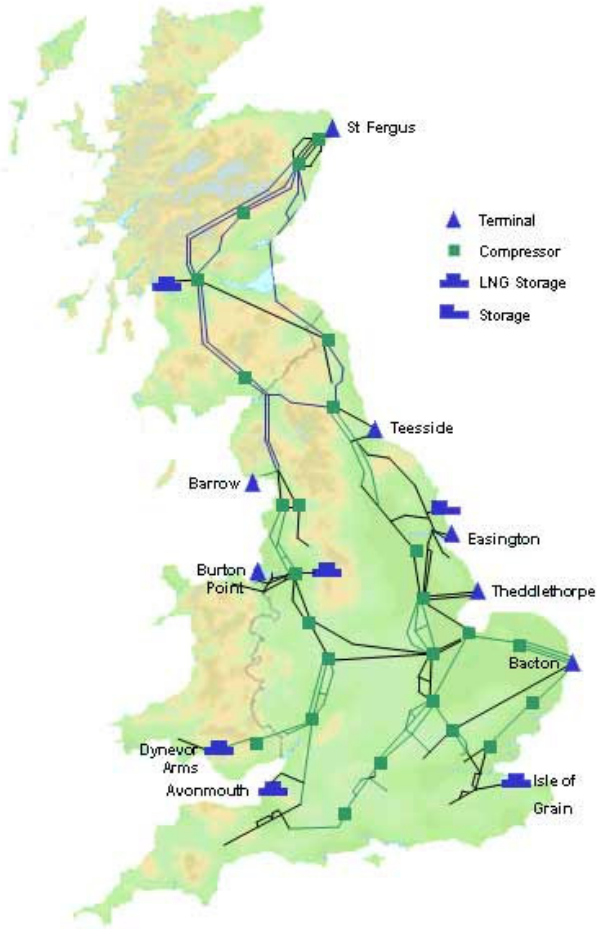
- **Discussion Paper or Consultation Paper?**
- **Potential timeline**
  - Discussion Paper February 2009
  - Discussion Report?
  - Consultation and Indicative prices (150 days notice) 1st May 2009
  - Final Proposals 1st July 2009
  - Prices published 1st August 2009
  - Implement 1st October 2009

Appendix

The following graphs show the results from comparisons of Rules 1, 3, 5 and 6 when considering the 2008/09, 2009/10 and 2010/11 Transportation Models using supply data from the last three published Ten Year Statements (in 2006, 2007 and 2008)

The first six graphs compare entry and exit prices under each rule when using supply data from each of the three Ten Year Statements i.e. comparing indicative and actual prices.

The last two graphs compare entry and exit prices under each rule comparing prices in 2008/09, 2009/10 and 2010/11



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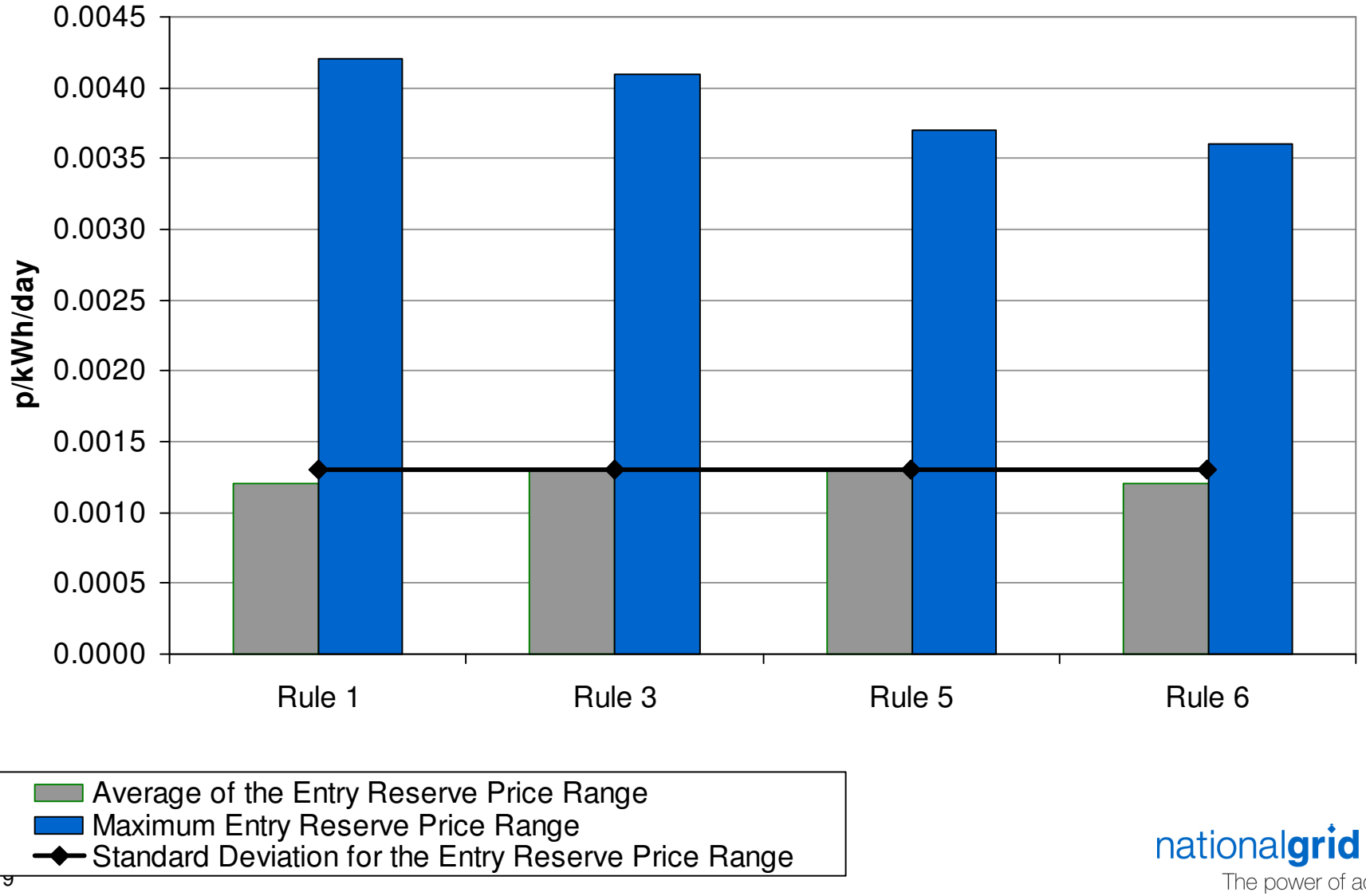
Entry Capacity Price Variation for 2008/09 across 2006, 2007 and 2008 Ten Year Statements

January '09 Analysis



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Entry Capacity Price Variation for 2009/10 across 2006, 2007 and 2008 Ten Year Statements

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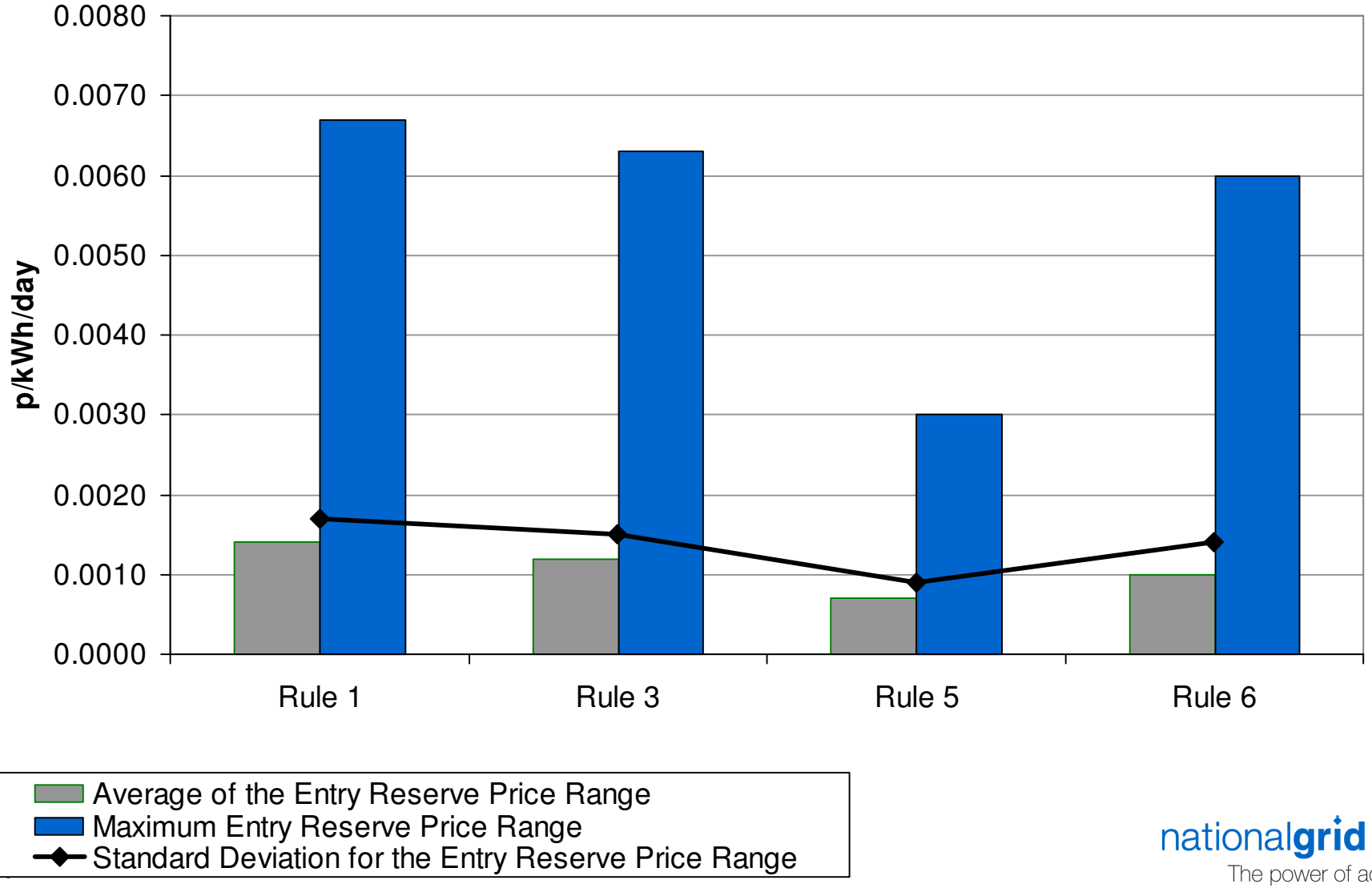

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Entry Capacity Price Variation for 2010/11 across 2006, 2007 and 2008 Ten Year Statements

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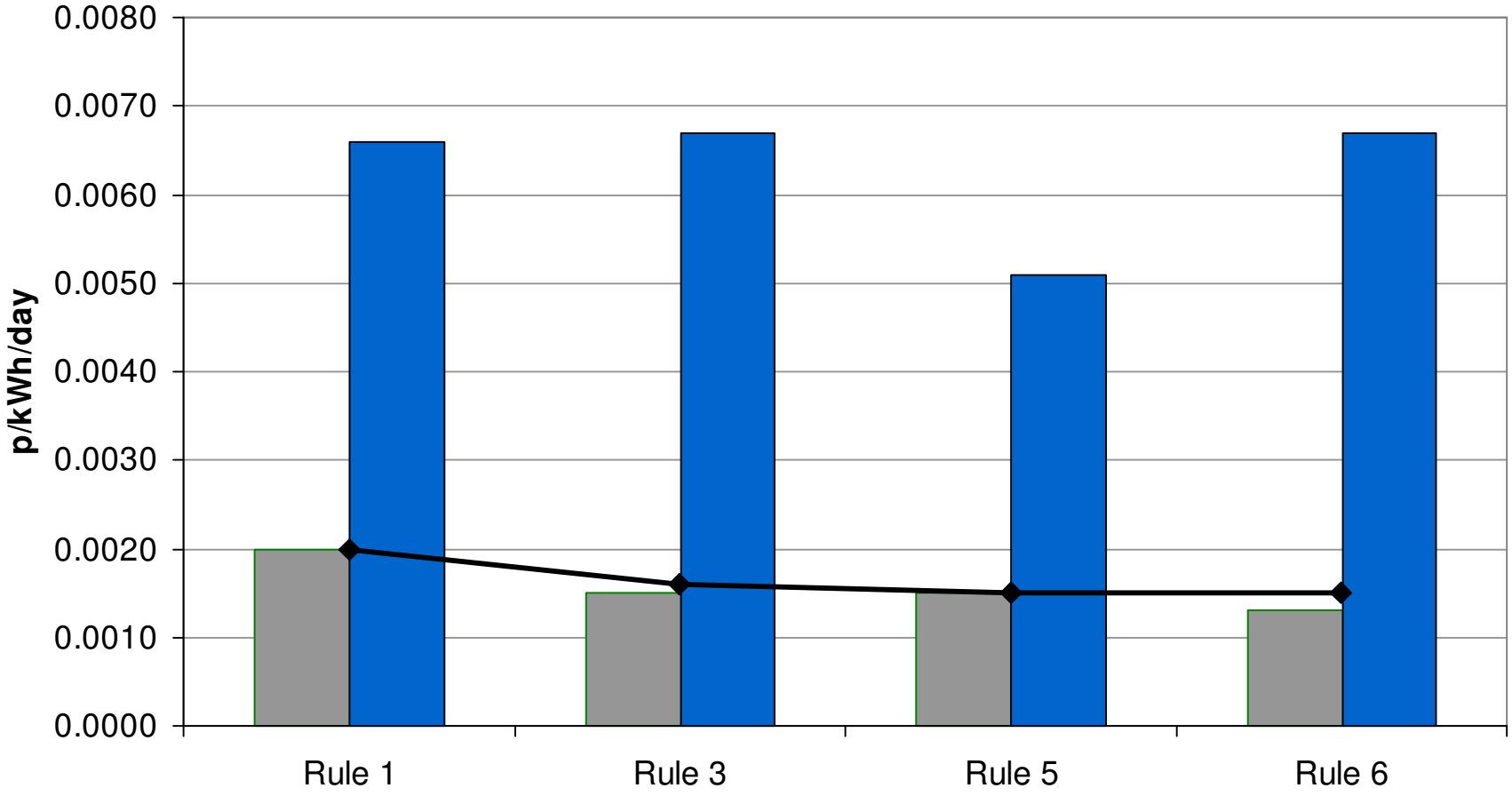

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Exit Capacity Price Variation for 2008/09 across 2006, 2007 and 2008 Ten Year Statements

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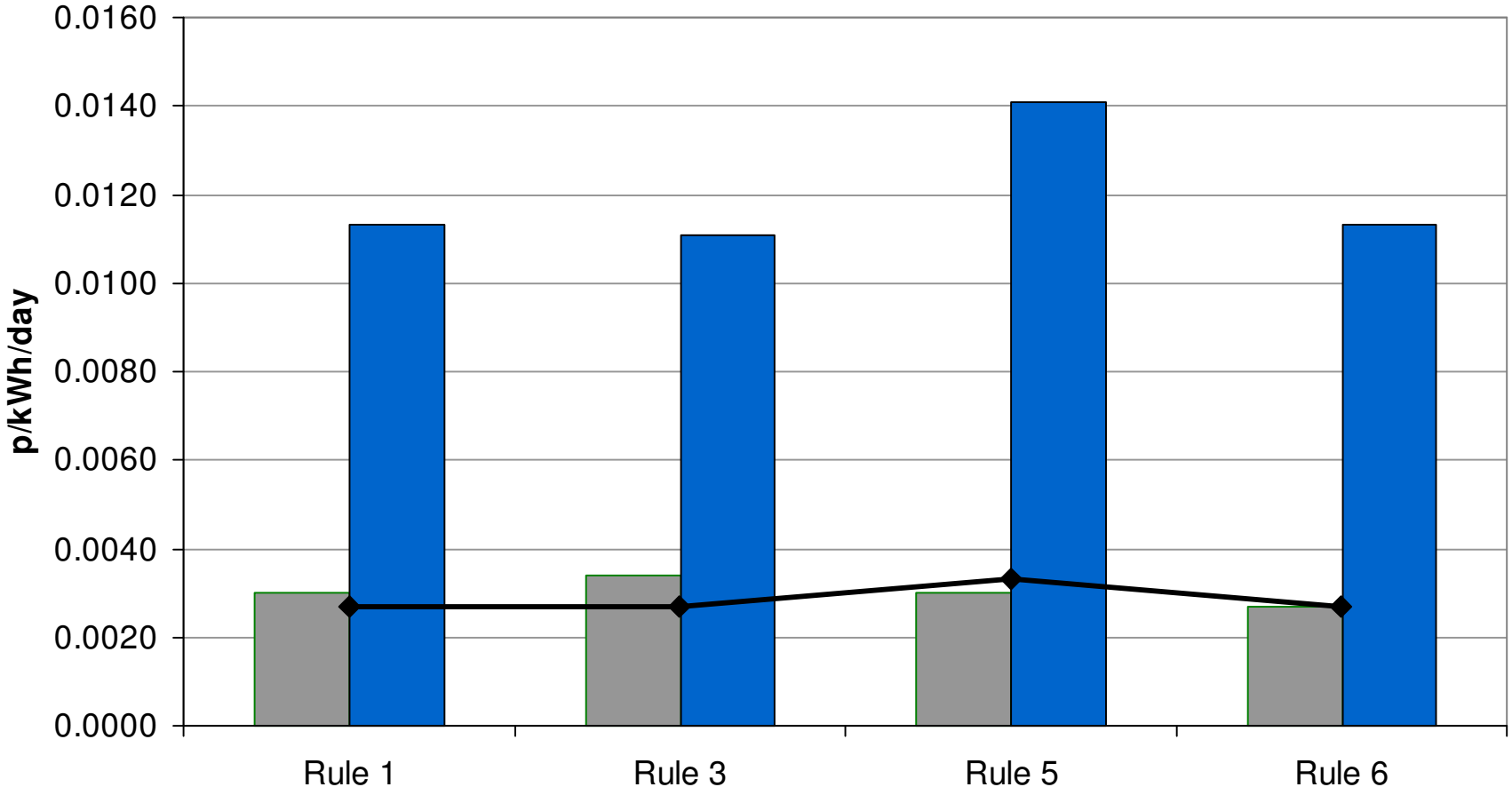

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Exit Capacity Price Variation for 2009/10 across 2006, 2007 and 2008 Ten Year Statements

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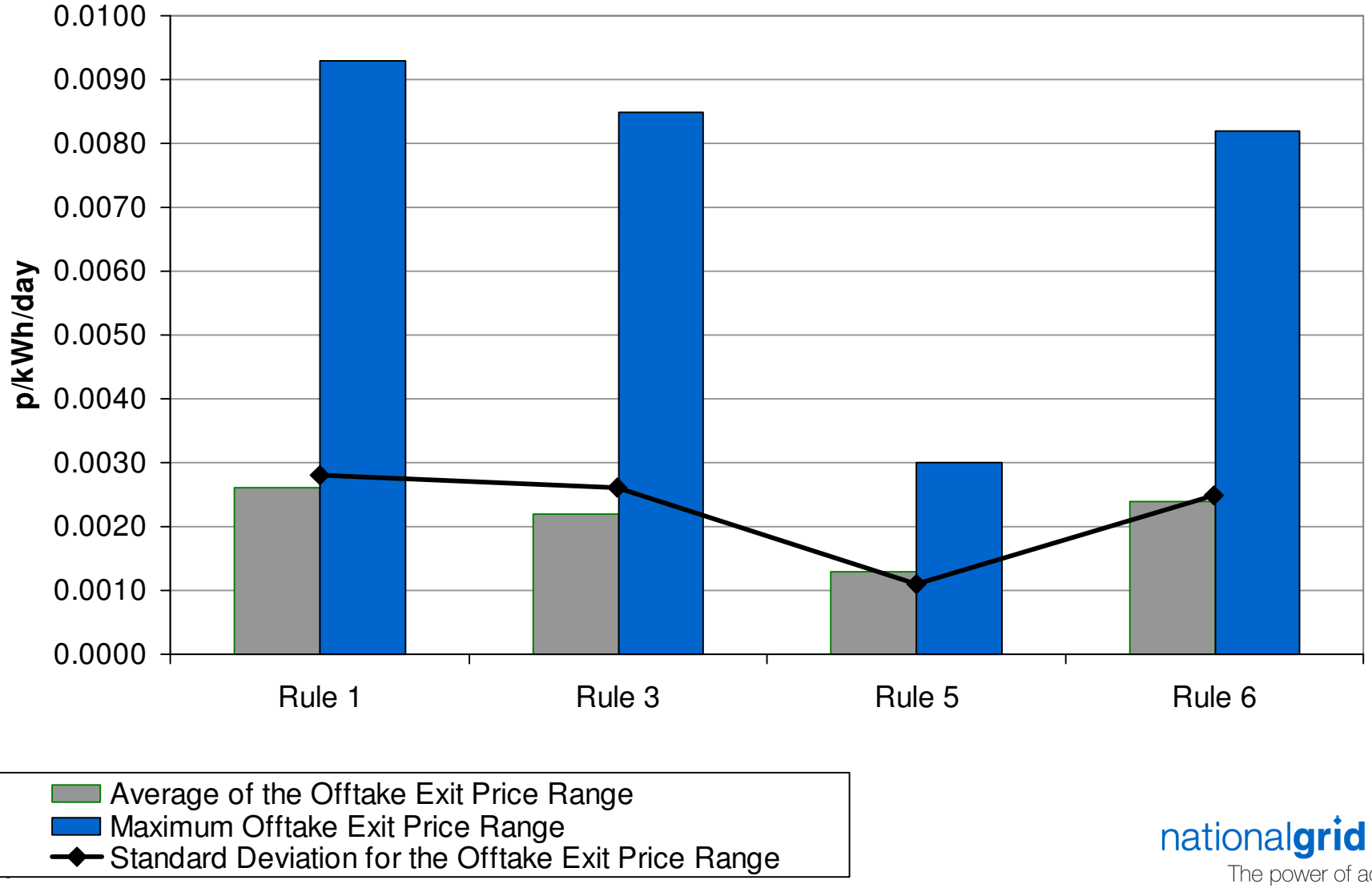

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Exit Capacity Price Variation for 2010/11 across 2006, 2007 and 2008 Ten Year Statements

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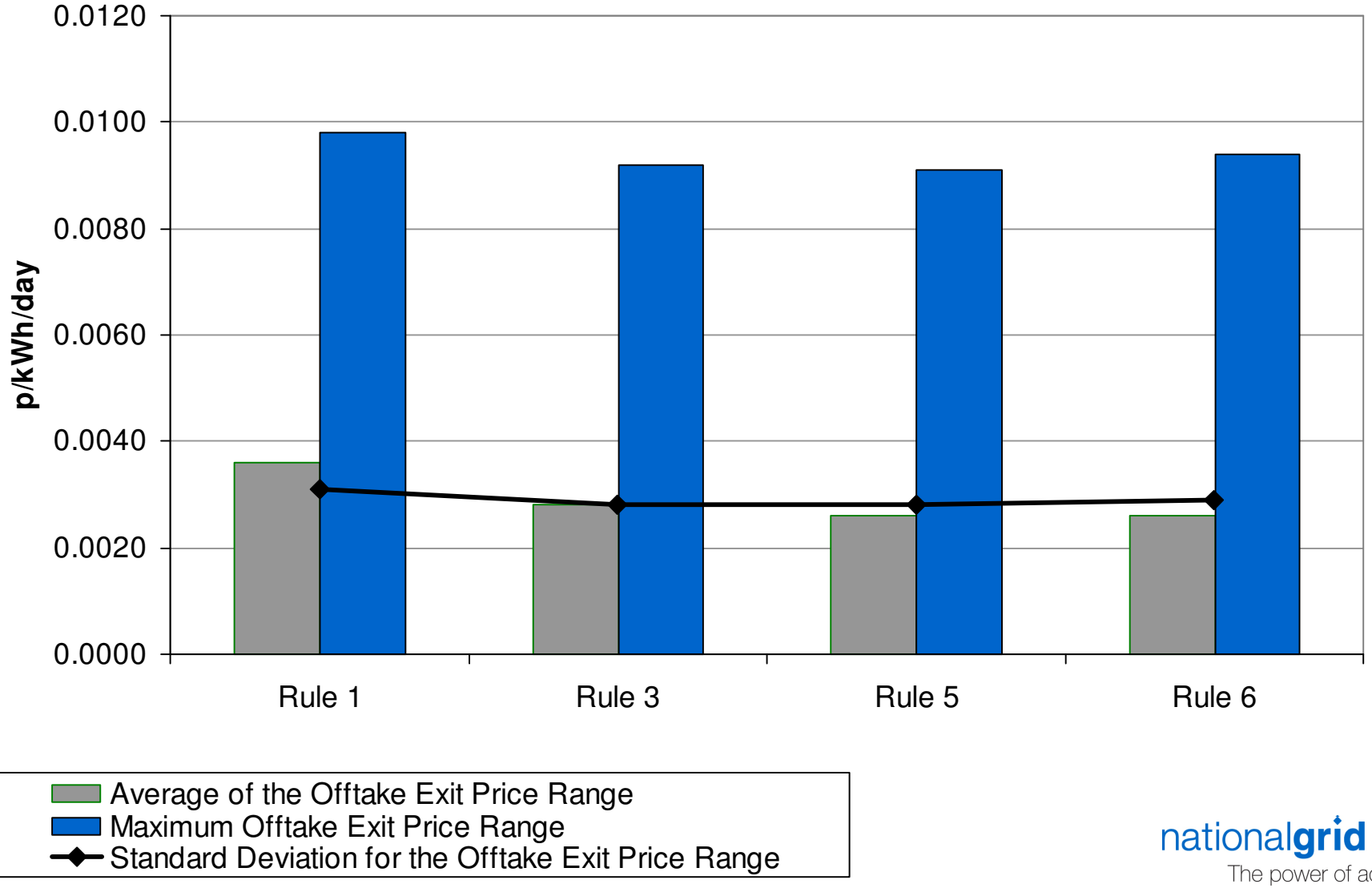

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Entry Capacity Price Variation across years 2008/09 (using 2007 TYS), 2009/10 (2008 TYS) and 2010/11 (2008 TYS) Transportation Models

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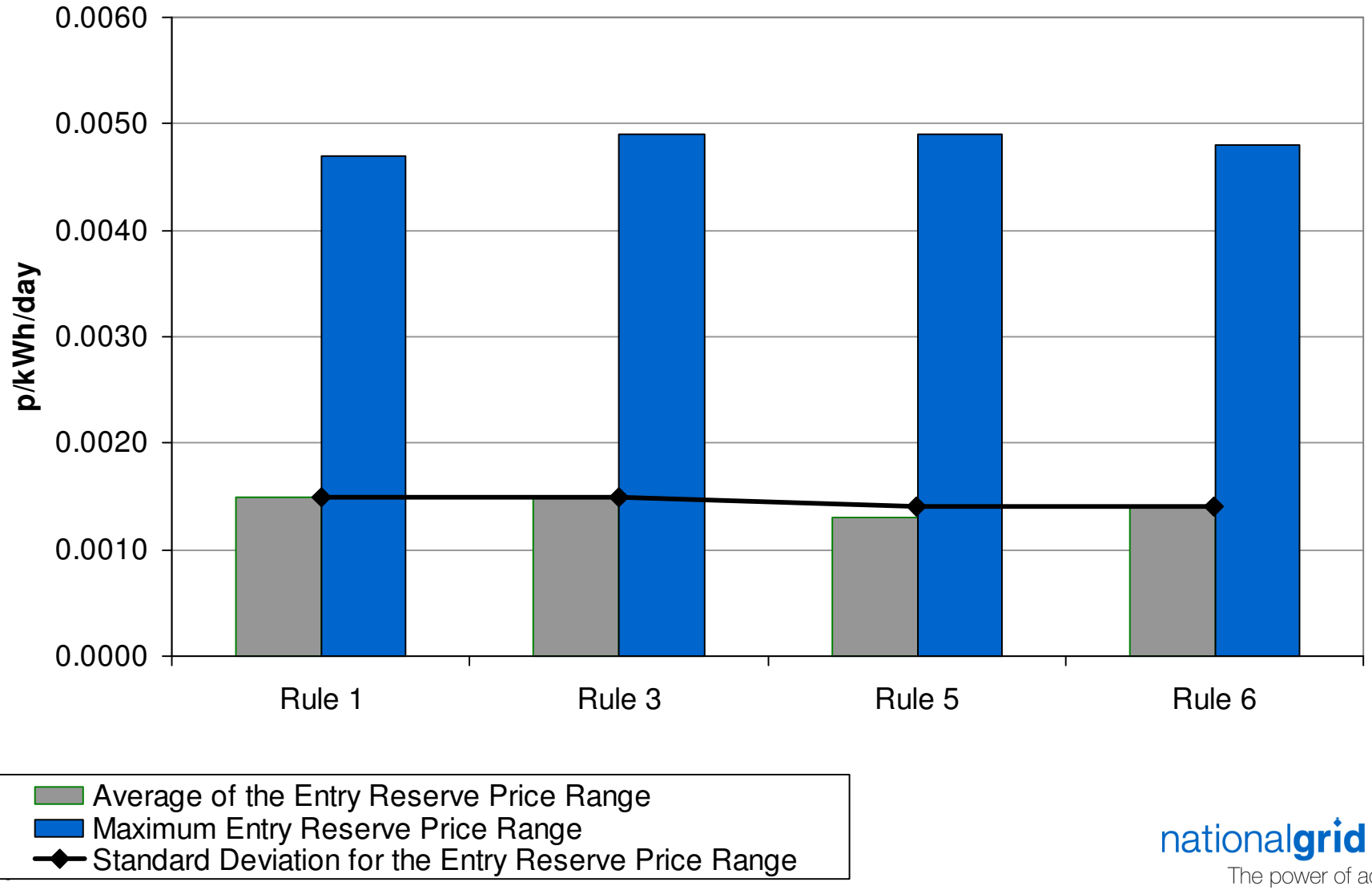

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Exit Capacity Price Variation across years 2008/09 (using 2007 TYS), 2009/10 (2008 TYS) and 2010/11 (2008 TYS) Transportation Models

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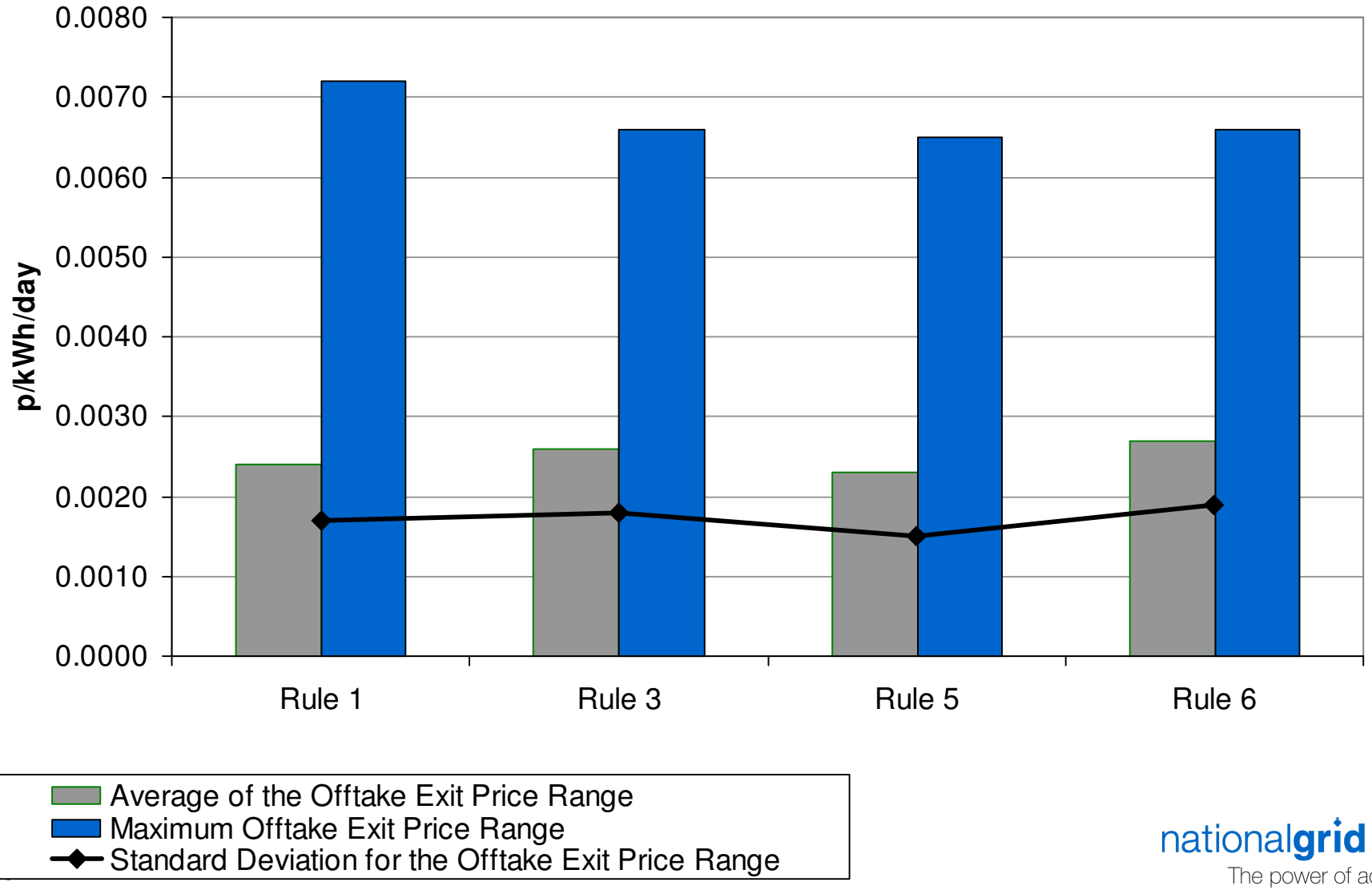

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