

# Modification Proposal 18

Panel Meeting 12th  
July 2001

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# P18 - Agenda



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- Description/Background to Modification Proposal P18A
  - Alternatives definitions of P18A
  - Analysis of impact
  - Modifications Group Recommendation
  - Consultation Responses
  - Implementation Options, Timescales and Costs
    - Central Service Provider & ELEXON
  - Recommendations

# P18A High-Level Description



- Offers and Bids from acceptances with a duration of less than [15] minutes are excluded from the energy imbalance price calculations.
- The Offers and Bids are still settled normally, it is simply their effect on SBP and SSP that is changed.
- Overlapping acceptances are taken into account when measuring the duration of the acceptances.
- Options exist to define exactly how the duration is measured, and how the effect of those with a duration of less than [15] minutes are excluded.
- The limiting duration (i.e. the [15] minutes) is referred to as CID

# Background to Modification P18



- Proposal Raised by NGC on 23/5 - treated as urgent by Panel
- Modification Group held meetings on 1/6, 12/6 & 28/6
- Two parts to the proposal
  - P18A - Introduces concept of “Continuous Instruction Duration” to separate System Balancing Costs from Energy Balancing Costs
  - P18B - Suggests a minimum volume of balancing actions from which imbalance prices can be set.
- Panel meeting on 14/6 decided to
  - concentrate on P18A &
  - defer decision on P15 and P18B
- This decision was ratified by the Authority.

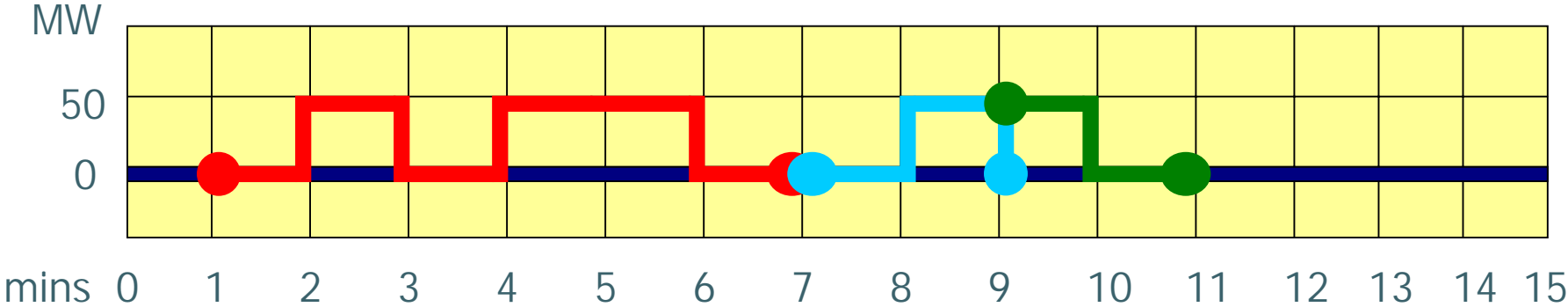
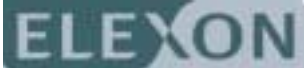
# What does P18A actually mean?



Two basic questions:

- 1) Exactly how do you define whether an acceptance has a duration of less than [15] minutes?
- 2) Exactly what do you do if it has?

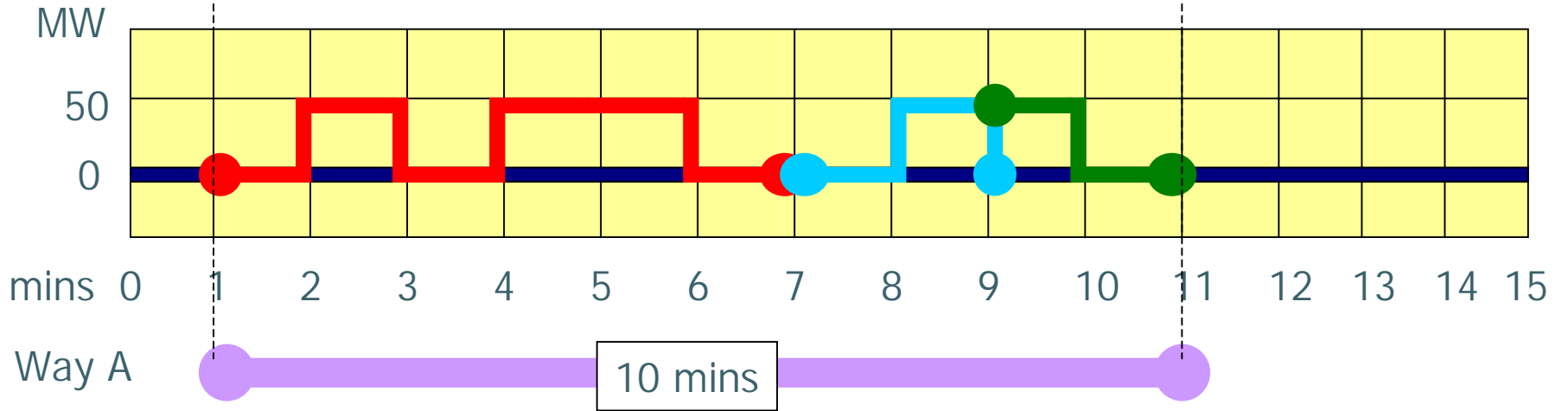
# Continuous Instruction Duration - An example



Two Basic ways of defining the Continuous Instruction Duration



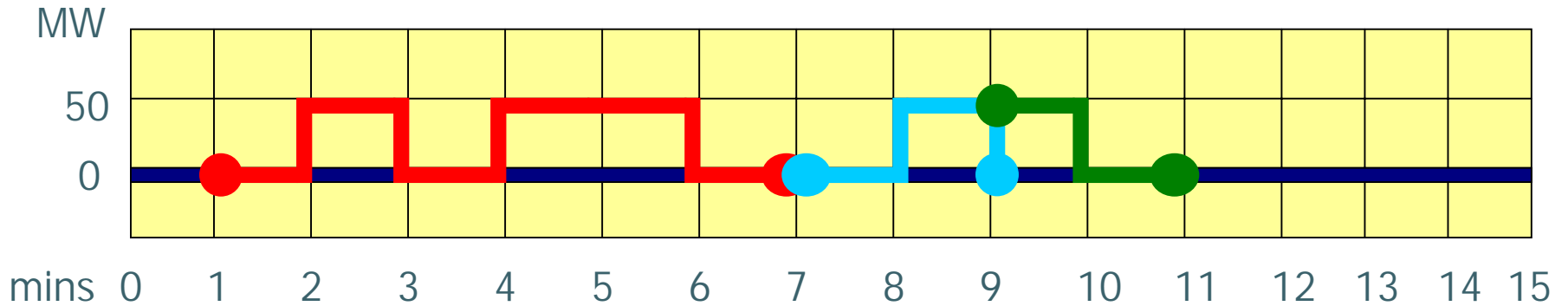
# Continuous Instruction Duration - An example



Way A:

Total Duration of overlapping acceptances & takes no account of FPN

# Continuous Instruction Duration - An example

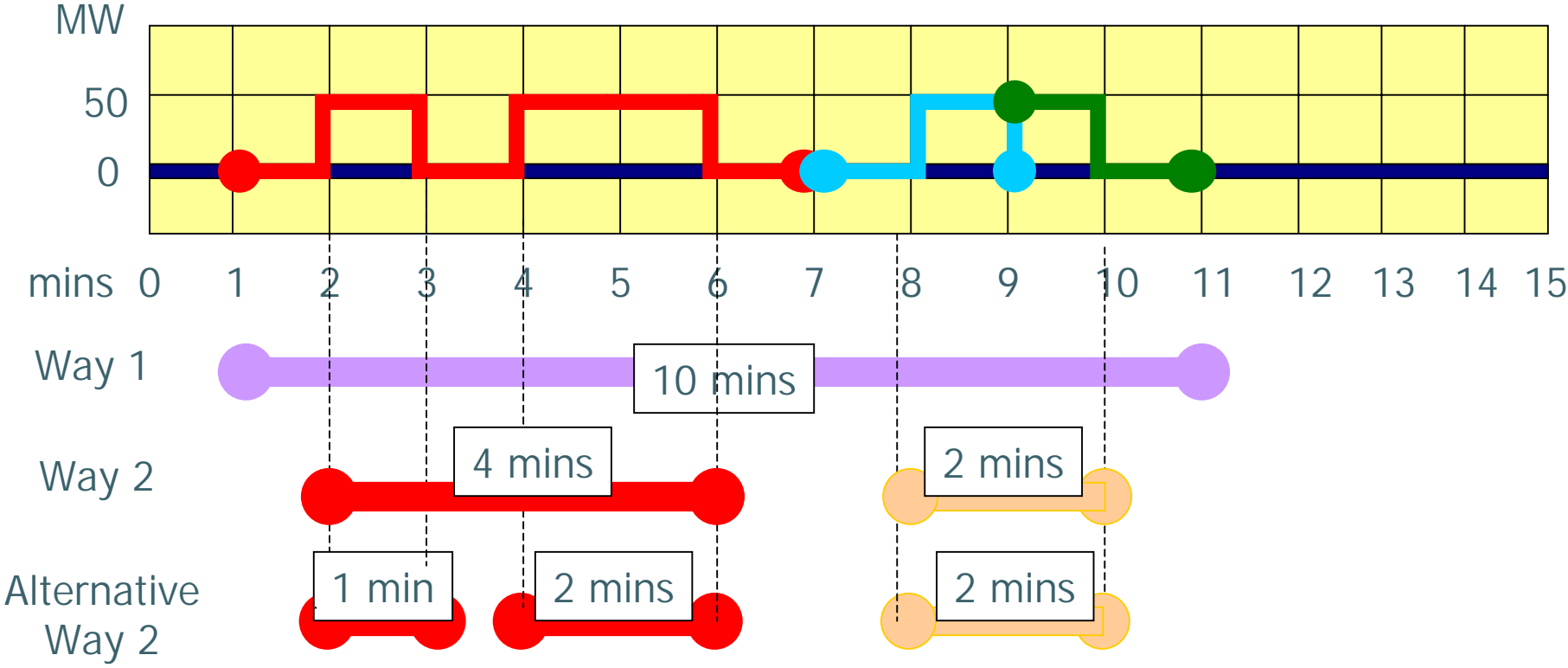
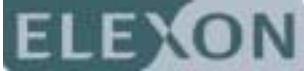


Way B:  
Measure deviations from FPN

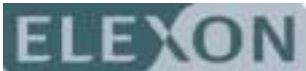
\*Option 2b Illustrated



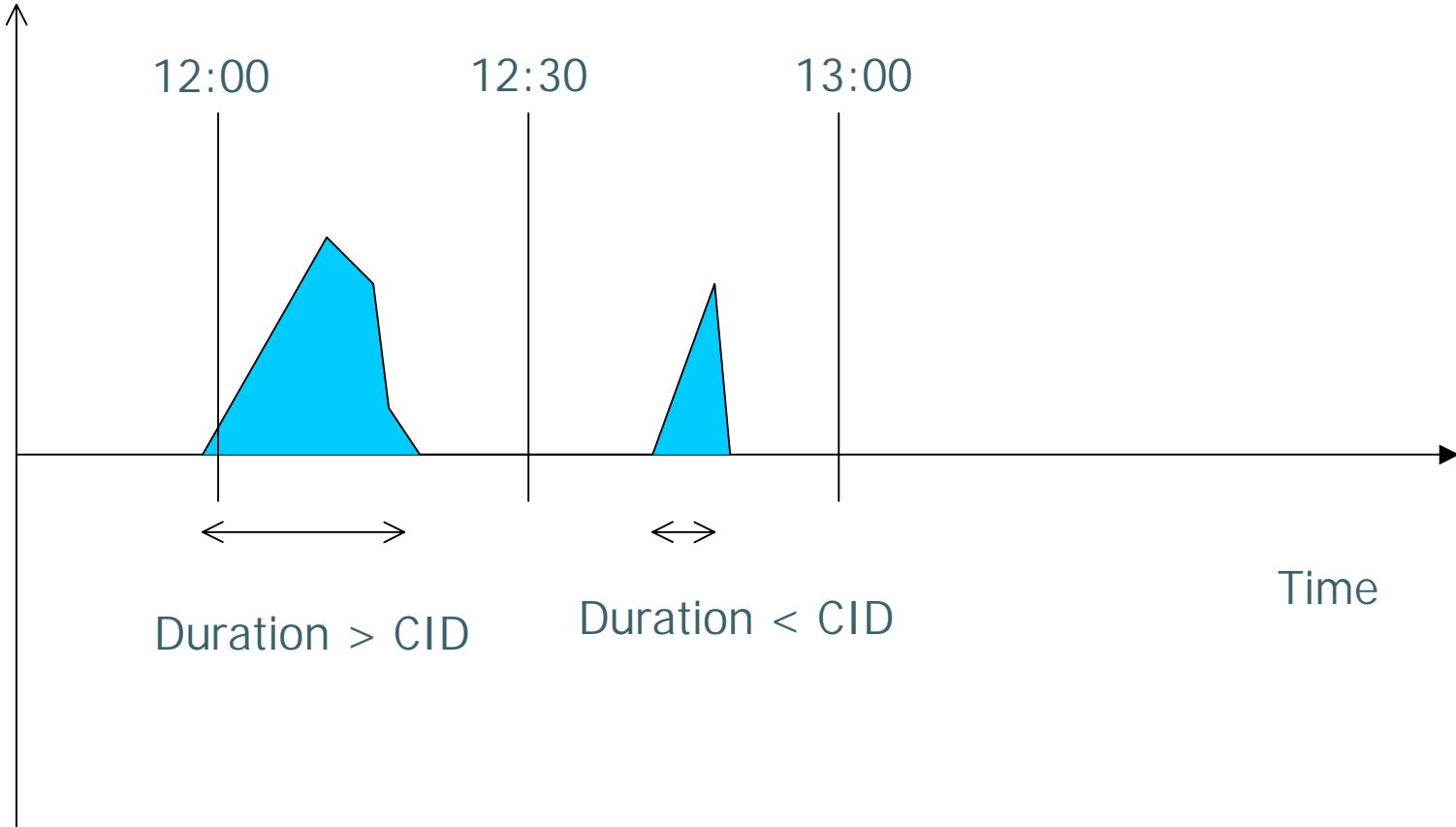
# Continuous Instruction Duration - An example



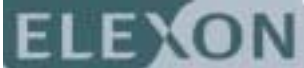
# Removal of Accepted Bids and Offers



Deviation from FPN



# CID-Definitions



	Remove entire Acceptance	Remove parts with duration < CID
Measure Acceptance Duration only	Option 1	Not considered
Measure duration of deviation from FPN	Option 2	Option 3

# Continuous Instruction Duration - An example



## Summary of alternatives:

### CID-definition 1:

Relatively simple

Measures duration of acceptance only

Removes effect of entire acceptances

### CID-definition 2:

Measures duration of deviation from FPN

Removes effect of entire acceptances

### CID-definition 3:

More complex

Measures duration of deviation from FPN

Removes effect of parts of acceptances

# CID-definition 0



- CID-definitions 1, 2 and 3 all require a delay of at least CID minutes after the Settlement Period before prices can be calculated
- CID definition 0 looks backward, not forward in order to determine continuous acceptance duration
- Prices are capable of being calculated immediately after the end of the Settlement Period

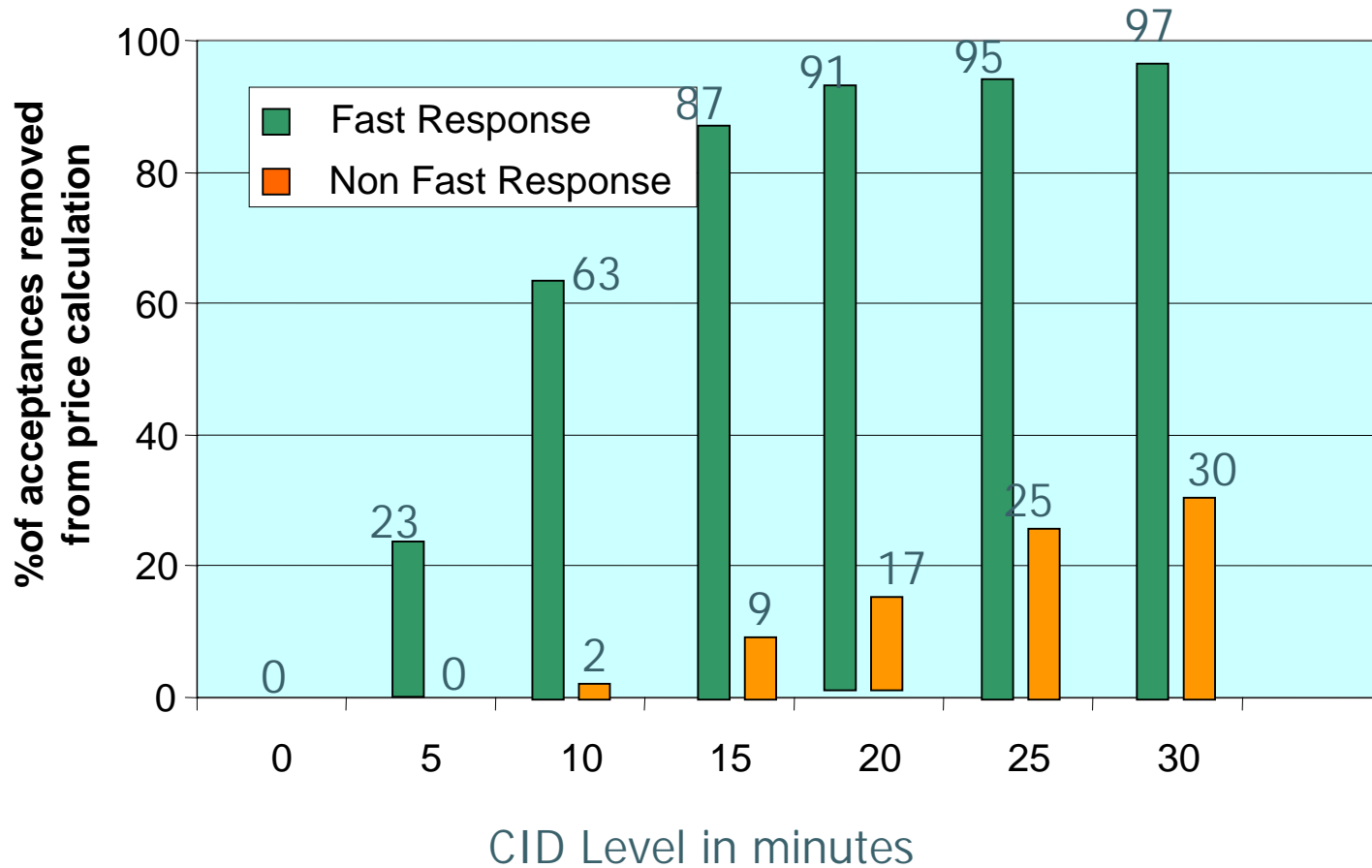
# Effect of P18A



- Analysis based on CID-definition1
- Options 2 and 3 more complex, although effects judged to be similar.
- Data used within analysis was for
  - 31 days of May; and
  - 10 days in June
- Analysis as follows:
  - Identified whether acceptances would have been tagged for a variety of CID limits
  - Recalculated energy imbalance prices

# Effect of P18A

## Fast Response vs Non Fast Response



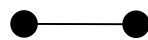
# Period Average Graphs



The following graphs provide a simulation of the distribution of the System Buy Price and System Sell Price against Settlement Period with various values of CID (CID definition 1).

The top set of lines represent the SBP, whilst the lower set represent the SSP.

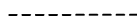
## Key



Represents the median - i.e. the middle price of the sample (50%)



Represents the band from the 25% to the 75% quartile.

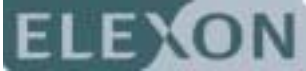


Represents the arithmetic mean, or average - its value is heavily influenced by large prices.

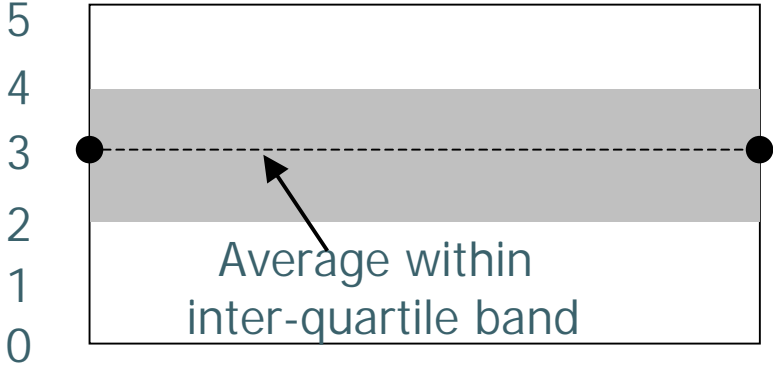


# Understanding the graphs

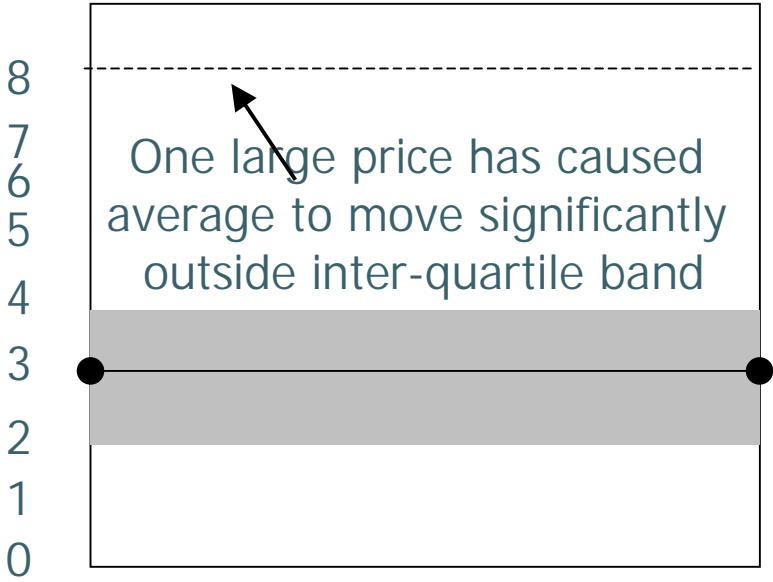
## 2 examples



1 Price values = 1, 2, 3, 4 & 5  
25% quartile = 2  
75% quartile = 4  
Median = 3  
Arithmetic Mean = 3



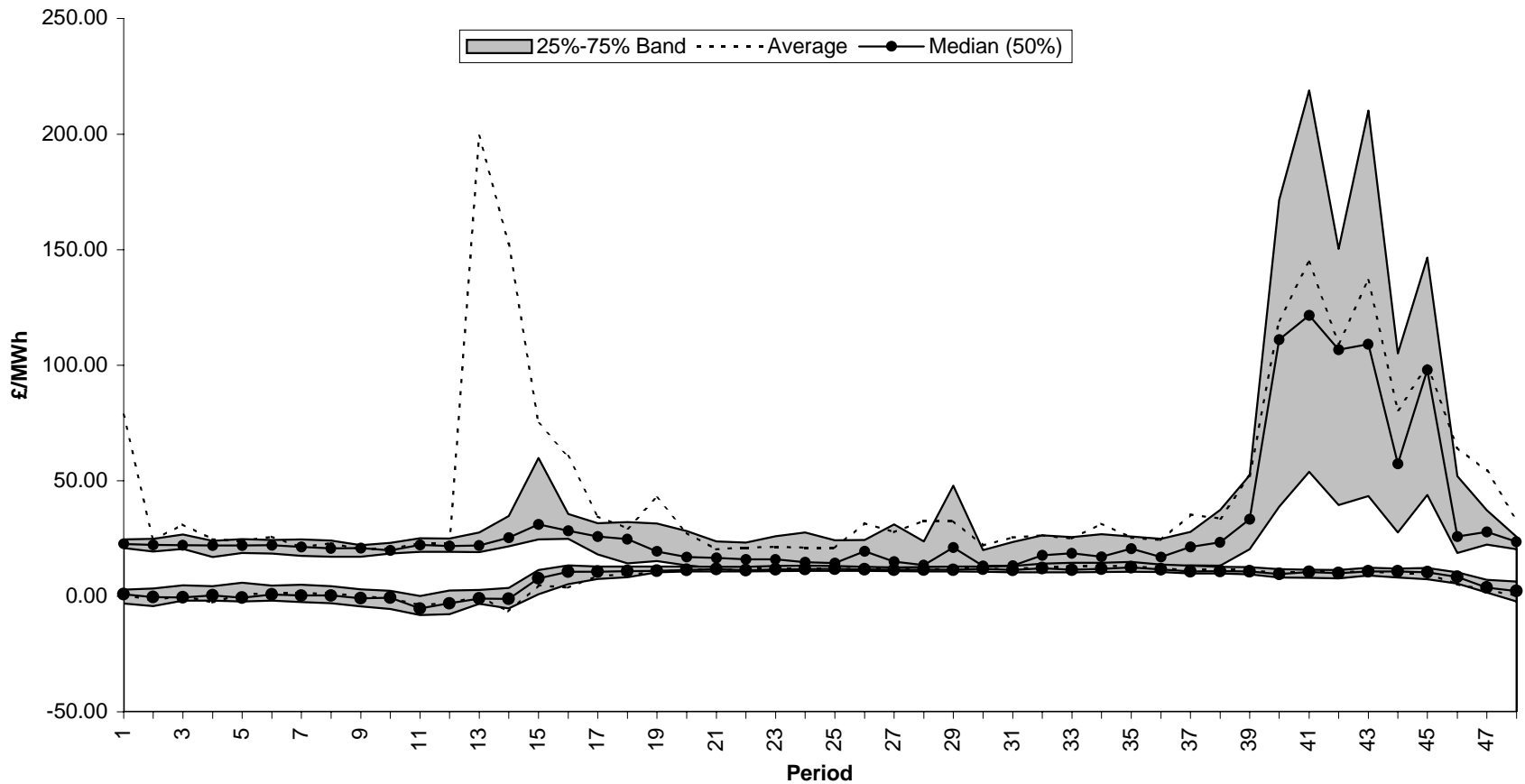
2 Price values = 1, 2, 3, 4 & 30  
25% quartile = 2  
75% quartile = 4  
Median = 3  
Arithmetic Mean = 8



# Period Average (without P18A)

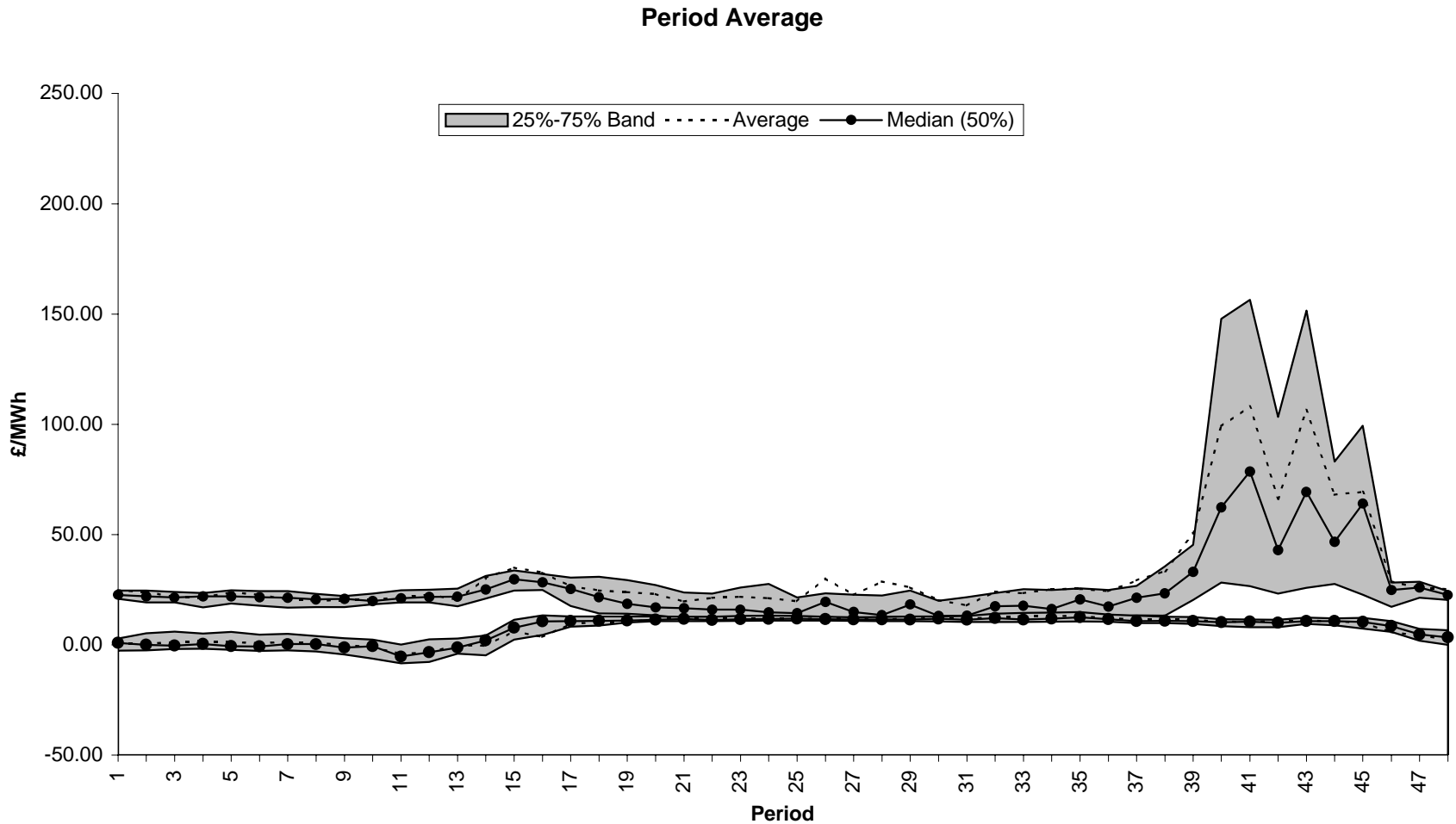


Period Average



Source of Data: 31 days during May 2001

# Period Average (without Fast Dynamic Plant)

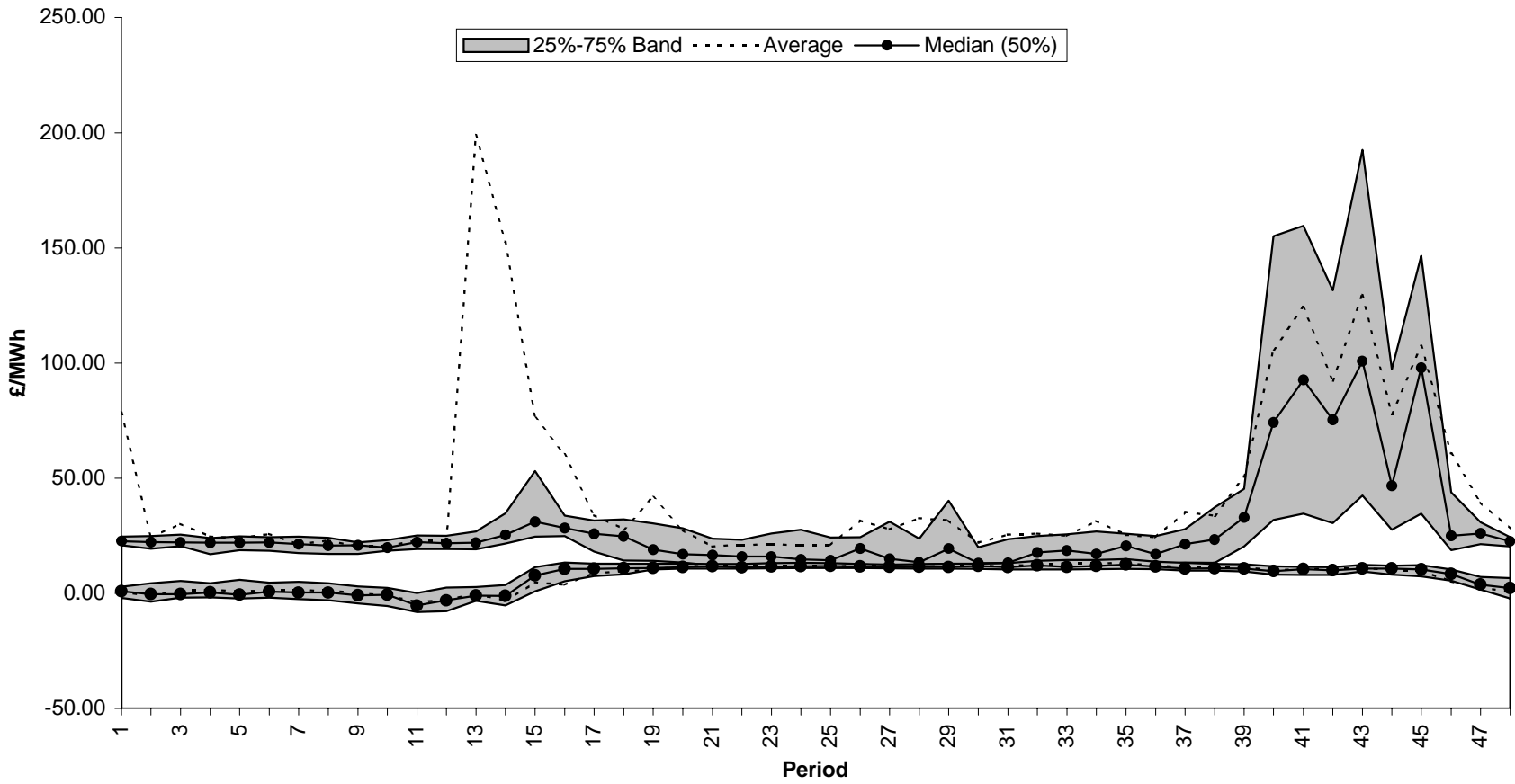


Source of Data: 31 days during May 2001

# Period Average P18A (CID = 5)



Period Average

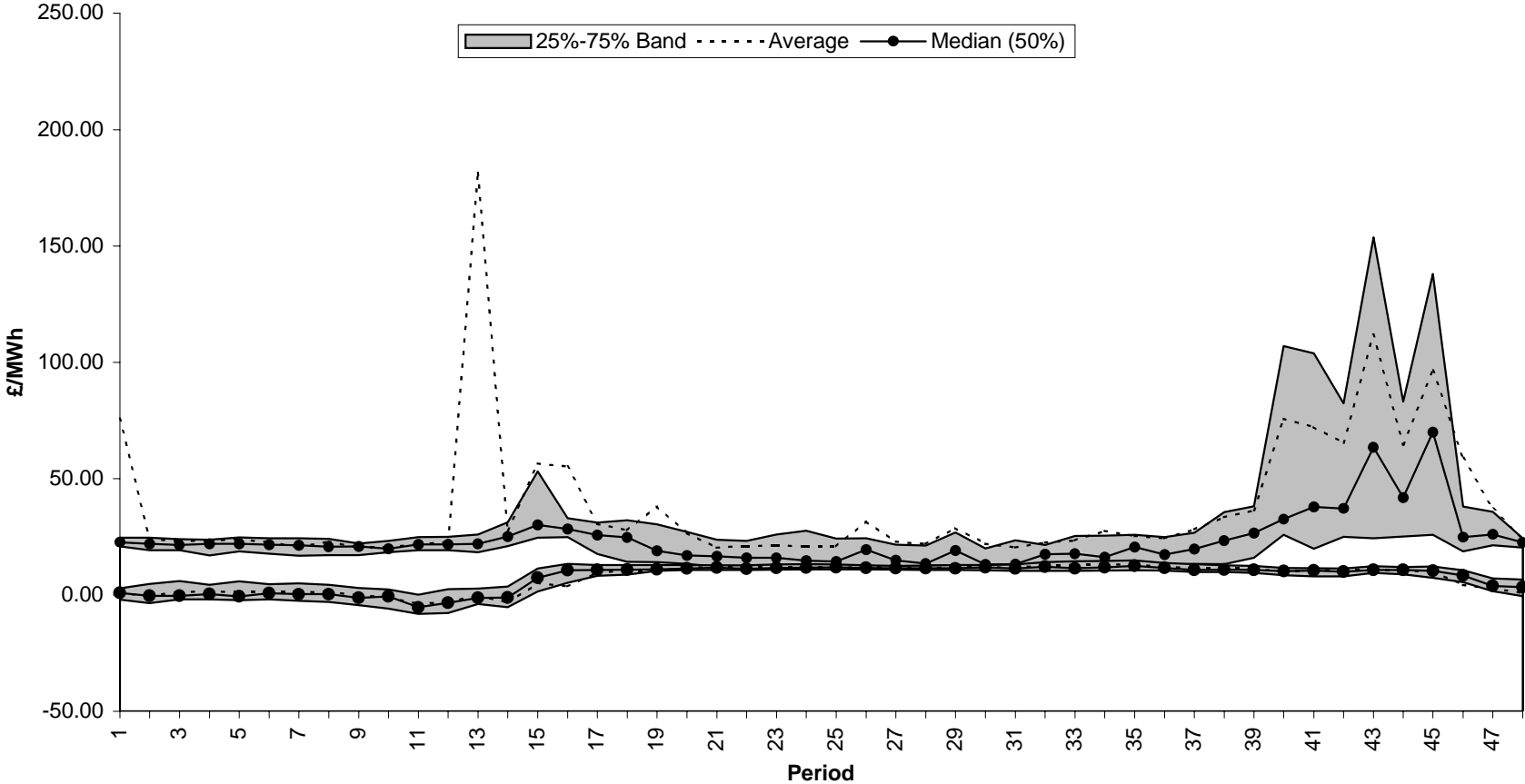


Source of Data: 31 days during May 2001

# Period Average P18A (CID = 10)



Period Average

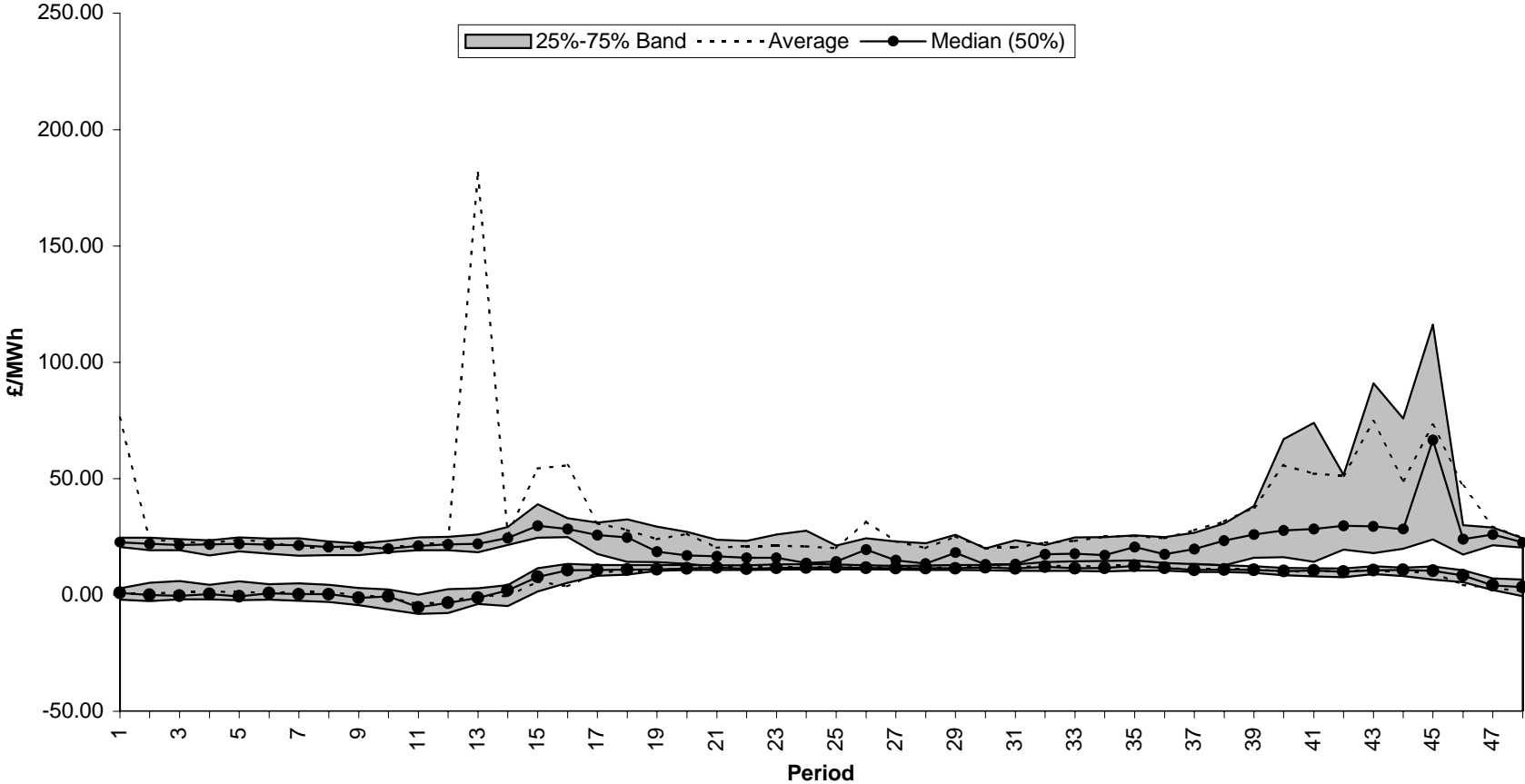


Source of Data: 31 days during May 2001

# Period Average P18A (CID = 15)



Period Average

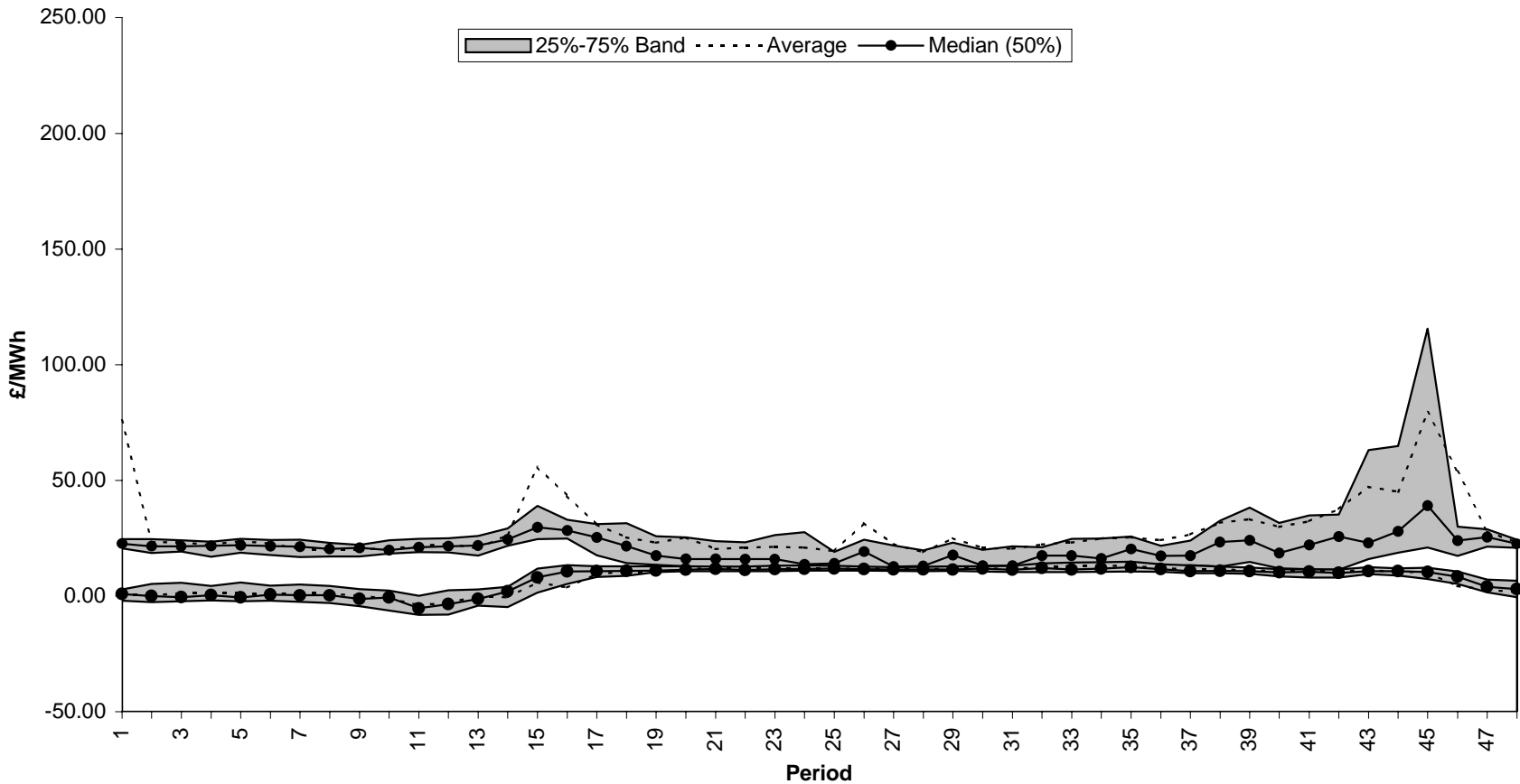


Source of Data: 31 days during May 2001

# Period Average P18A (CID = 20)

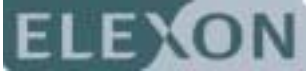


Period Average

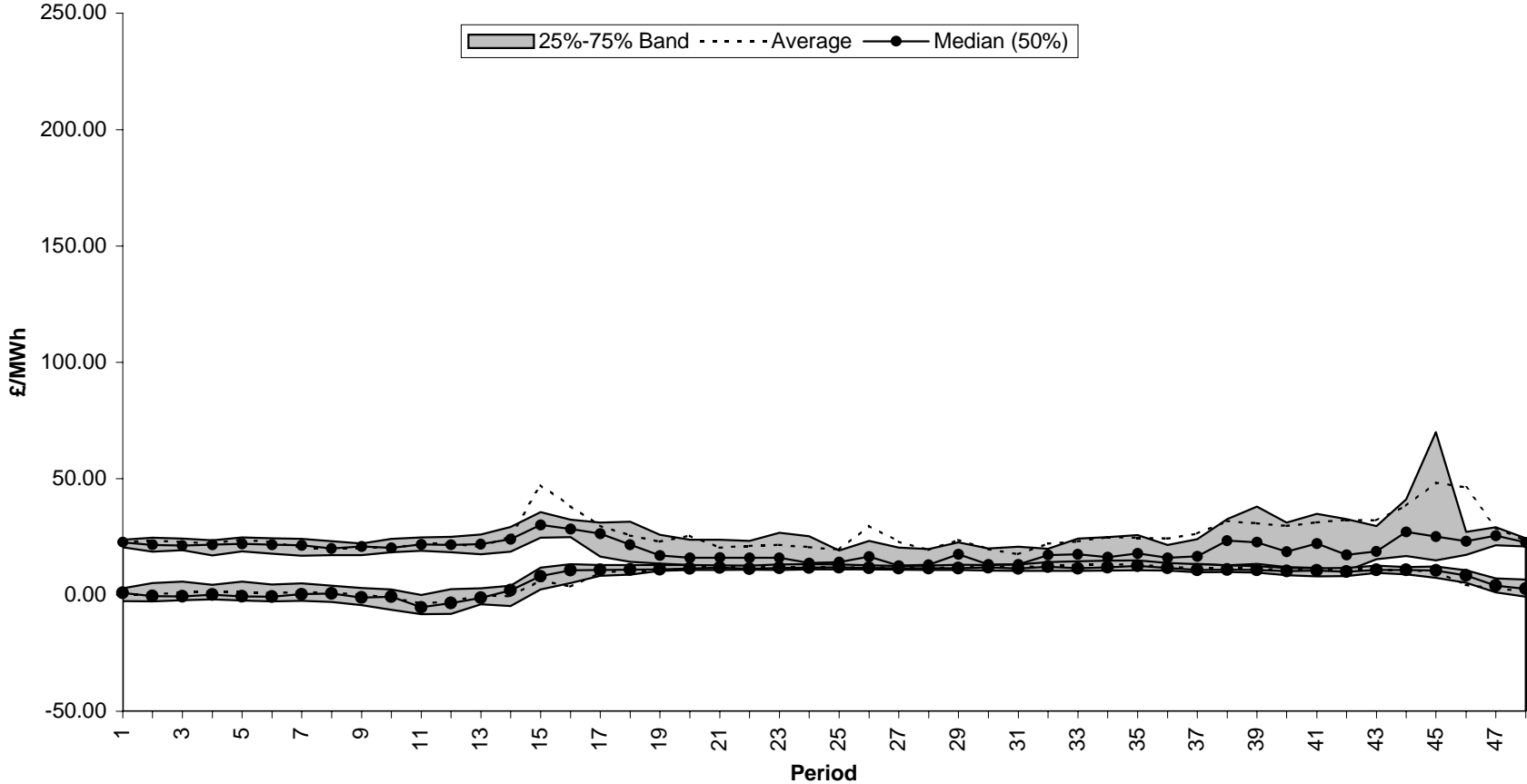


Source of Data: 31 days during May 2001

# Period Average P18A (CID = 25)



Period Average



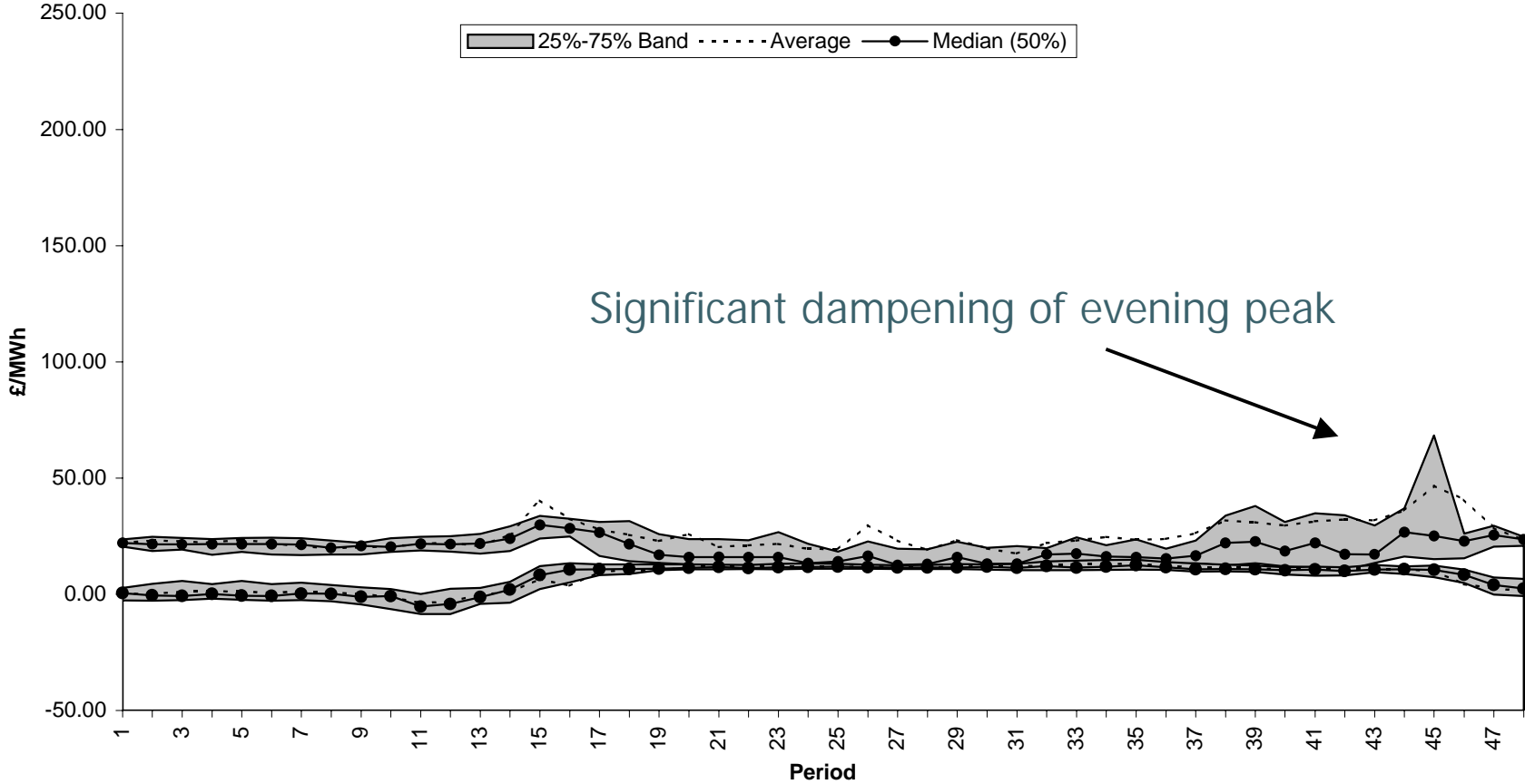
Source of Data: 31 days during May 2001



# Period Average P18A (CID = 30)



Period Average

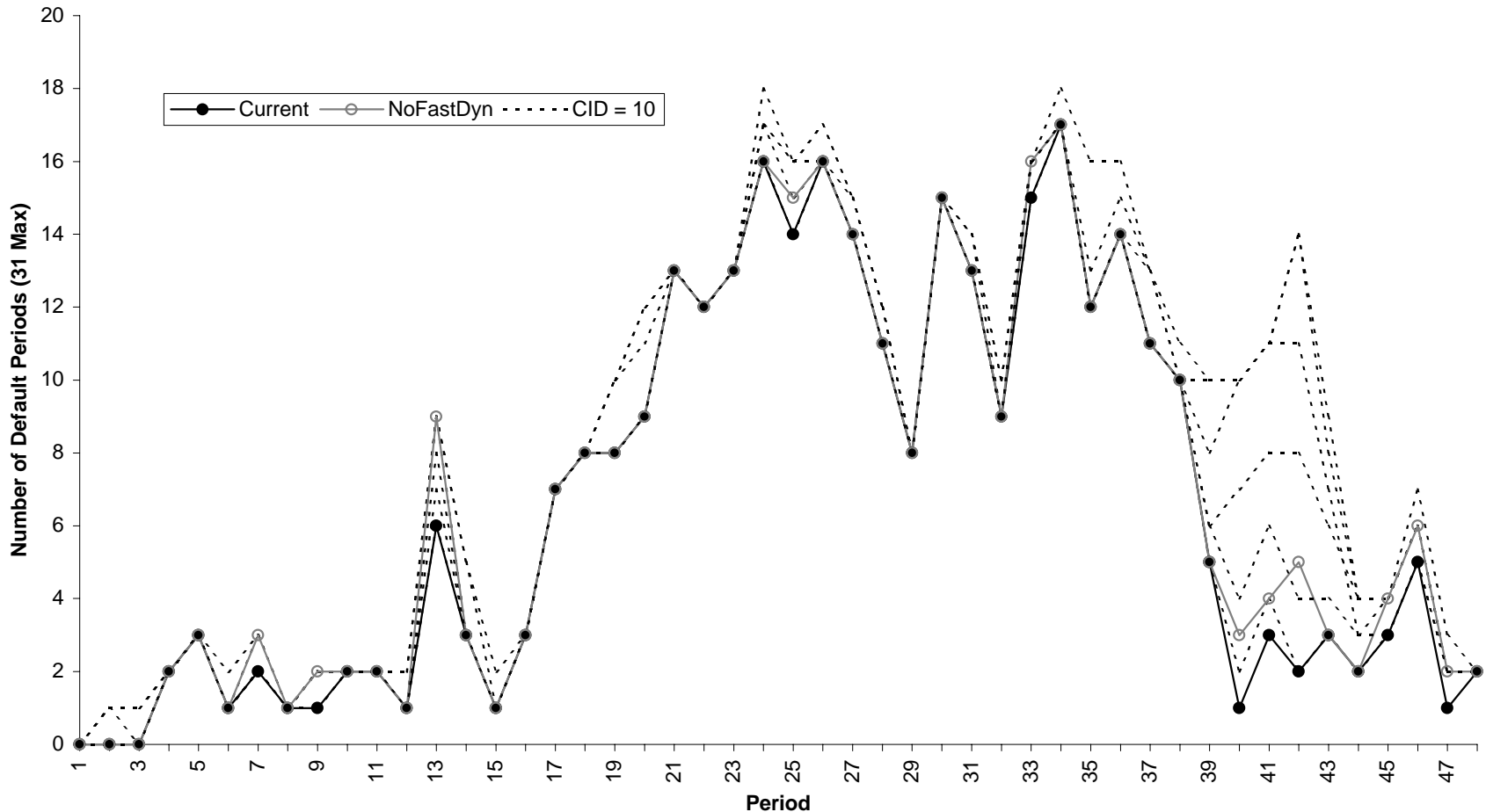


Source of Data: 31 days during May 2001

# Analysis of Default Periods



Analysis of Default Periods



Source of Data: 31 days during May 2001

# Some “Interesting” Periods



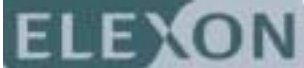
Settlement Date	Period	Current SBP	CID						No Fast Dynamics
			5	10	15	20	25	30	
05-May-01	13	5000	5000	5000	5000	11	11	11	11
18-May-01	14	3090	3090	15	15	15	15	15	15
18-May-01	1	1597	1597	1597	1597	1597	30	21	30
05-May-01	15	680	778	224	224	270	33	11	31
08-May-01	45	269	587	587	114	571	99	35	95
16-May-01	46	167	167	167	167	455	455	455	25
29-May-01	41	475	475	273	273	7	7	6	273
22-May-01	47	470	17	17	17	17	17	17	17
10-May-01	43	417	461	461	70	70	70	70	270
15-May-01	14	460	460	34	36	36	36	36	34

# Conclusions from analysis



- Increasing CID flattens prices
- Reducing CID means some spikes may be retained
- Some prices can, however, increase
- 50% of periods during day already have a default price
- CID can increase the incidence of default prices to 50% during the evening

# Implementation Architectures



## Architecture 1

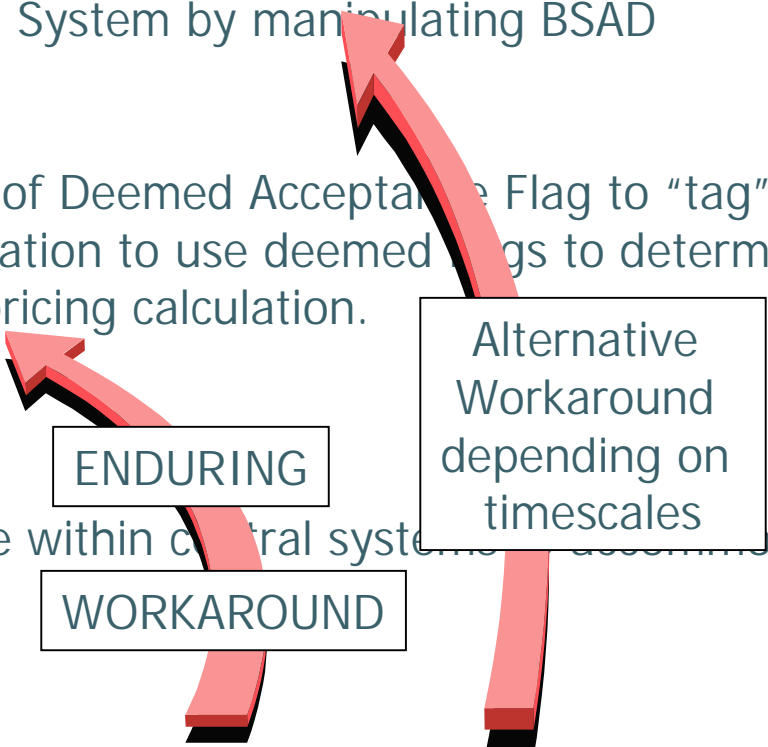
Prices calculated using ELEXON pricing engine  
New prices fed into Central System by manipulating BSAD

## Architecture 2

Central Systems make use of Deemed Acceptance Flag to “tag” each acceptance.  
Central System price calculation to use deemed acceptance flags to determine which acceptances to include in pricing calculation.

## Architecture 3

Re-engineer pricing module within central systems to accommodate  
CID definition 3



Modification Group Recommendations

# Architecture Analysis



Architecture	Workaround	Enduring	Optimal CID Defintions
1	Yes	No	0 & 1
2	Yes	Yes	0, 1 & 2
3	No	Yes	3

# Modification Group Recommendations



Based on the analysis, the Modification Group recommended the following:

- An interim workaround solution for Modification P18A is feasible;
- Taking a pragmatic approach, and given the urgency of the Modification Proposal, an interim solution based on P18A “CID-definition” 1a should be implemented;
- Either “workaround-architecture” option 1a or option 2 should be used to support an initial implementation of “CID-definition” 1a. The choice of “workaround-architecture” to use should be based upon the results of the impact assessments from ELEXON and Logica;
- “CID-definition” 1a would be an acceptable enduring solution, and the adoption of more sophisticated options in the longer term should be considered primarily from the practical perspective of systems implementation;

# Modification Group Recommendations



- Enduring-architecture option 3 should only be considered if it is identified that it would take not more than 6 months longer than, nor cost £500k more than option 2;
- If, based on the above, “enduring-architecture” option 2 is progressed, then “CID-definition” 1A should be adopted as the enduring solution;
- This decision may be reviewed if it appears that CID-options 2 can be implemented without significant additional cost or timescales implications (compared to 1a) under enduring architecture 2.
- If, based on the above, “enduring-architecture” option 3 is progressed, then “CID-definition” 3 should be adopted as the enduring solution.
- If “CID-definition” 3 is adopted as the enduring solution, with “CID-definition” 1A as the interim solution, no reconciliation based on the “CID-definition” 3 rules should be undertaken for those Settlement Days on which “CID-definition” 1A applied.



# Consultation Document



- Issued on 5th July 2001 by the Modification Group
- Explained options and set down analysis
- Invited respondents to agree with Modification Group recommendations, or to give alternative views.
- Introduced CID-definition 0
- Asked the following additional questions:
  - Do you believe that Modification Proposal P18A is capable of achieving its stated aims?
  - Do you agree that the [recommended] approach should be taken, except that CID-definition 0 should replace CID-definition 1a for the workaround and enduring solutions?
  - At what level should the initial value of CID be set?

# Consultation Responses



- 16 responses
- Broadly speaking the Modification Group recommendations were supported, although this was by no means unanimous.
- A number of specific concerns:
  - Timescales in which Modification had been progressed
  - Information available to make decisions (IA, quantity of analysis, etc.)
  - Delays in BMRS systems changes and delay in price calculation in longer term may reduce liquidity.
- Range of CID limit values varied from 5 minutes to 30 minutes.
  - Lower value avoids tagging System balancing trades
  - Higher value ensures they are captured.
  - Most supported a value in the range from 15-20

# Implementation Costs and Timescales

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HIGH LEVEL RESULTS ONLY

Elapsed = Time to complete work from time of instruction to progress

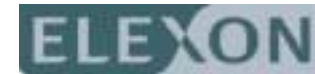
Assumes no other development work being carried out

Subject to 50% variation (Only possible to obtain a High Level Impact Assessment)

**Need to understand delivery against other priorities!**

# Implementation Options

(High Level Impact Assessment)



			Development Costs / Time (£ k) (weeks)		Operation & Maintenance Costs (£ k / month)
<b>Interim</b>	<b>1a</b>	Central	72	5	12.0
		ELEXON	80	5	30.0
	<b>2</b>	Central	174	14	2.5
<b>Enduring</b>	<b>2</b>	Pricing	289	18	4.3
		BMRA Reports	222	17	3.4
	<b>3</b>	Pricing	356	22	5.3
		BMRA Reports	404	32	6.0

# Panel Recommendations



The Panel is invited to recommend to the Authority that:

- Modification P18A, should be implemented, noting that the majority of respondents to the consultation believed that Modification Proposal 18A would meet its stated objectives and/or should be implemented.
- Taking a pragmatic approach, and given the urgency of the Modification Proposal, an interim solution based on P18A “CID-definition” 1a should be implemented, initially via workaround architecture 1a, and either:
  - P18A CID-definition 1a should be retained as the enduring solution, noting that as soon as is practicable the workaround implementation will be replaced by a system implemented by the Central Service Provider, based on enduring architecture 2; or
  - P18A CID-definition 3 should be subsequently implemented as the enduring solution, effective from [eight] months after the effective date of the Modification.

# Panel Recommendations

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Continued..

- The initial value of the CID limit should be set at 15 minutes in accordance with the original Modification Proposal submitted by NGC.
- No further action should be taken in relation to the sub-option P18B.