

Sensitivity Analysis LRMC, CWD, Postage Stamp



UNC Mod 0621 Analysis
18/04/2018

Sensitivity Analysis - Background

- Analysis List #3
- From the [Sensitivity Analysis Conclusions](#) paper from January 2017 it was determined that:
 - LRMC results are not intuitive and the results are unpredictable
 - CWD and Postage Stamp are impacted by the changes, however the results are predictable and identical across all Entry and Exit points
- Therefore, as part of the 0621 we have refreshed the analysis that looks at the sensitivity of changing the inputs of the Long Run Marginal Cost (LRMC), Capacity Weighted Distance (CWD) and Postage Stamp reference price methodologies, to assess the different methodologies against the charging and stakeholder objectives

Sensitivity Analysis – Modelled Inputs

- For LRMC the following input changes were made:
 - Supply and Demands (increase and decrease of 10%)
 - Merit Order (all supply values pro-rated together)
 - Revenue (increase and decrease of 10%)
 - Capacity Values (increase and decrease of 10%)
- For CWD and Postage Stamp the following input changes were made:
 - Revenue (increase and decrease of 10%)
 - Forecasted Contracted Capacity (increase and decrease of 10% at each entry and exit point)

Sensitivity Analysis – LRMC – Analysis Results

Input Adjustment	Range Impact on Entry		Range Impact on Exit	
	Decrease	Increase	Decrease	Increase
Merit Order - Prorated	-64%	2400%	-52%	6400%
Supply and Demand – 10% Decrease	-99%	7900%	-99%	2400%
Supply and Demand -10% Increase	-8%	307%	-94%	12100%
Revenues – 10% Increase	0%	0%	0%	1500%
Revenues – 10% Decrease	0%	0%	-94%	0%
Capacity – 10% Increase	0%	47%	-94%	0%
Capacity – 10% Decrease	-81%	0%	0%	1600%
Merit Order Prorated / Supply and Demand – 10% Increase	-64%	2000%	-52%	6400%
Merit Order Prorated / Supply and Demand – 10% Decrease	-99%	3400%	-52%	6400%
Supply and Demand / Revenue / Capacity – 10% Increase	-93%	7900%	-99%	2400%
Supply and Demand / Revenue / Capacity – 10% Decrease	-11%	253%	-94%	12100%

* Assumptions and data charts are in the appendices of this slide pack. Full data tables are published on the Joint Office website

Sensitivity Analysis – CWD / Postage – Analysis Results

Input Adjustment	Range Impact on Entry	Range Impact on Exit
Revenue – 10% Increase	10%	10%
Revenue – 10% Decrease	-10%	-10%
Capacity – 10% Increase	-9%	-9%
Capacity – 10% Decrease	11%	11%

* Assumptions and data charts are in the appendices of this slide pack. Full data tables are published on the Joint Office website

Conclusions

- We believe that there is no change to the conclusions from the previous analysis/conclusions and that the LRMC model is no longer suitable and should not be a proposed Reference Price Methodology for this modification.
- Therefore an alternative Reference Price Methodology, such as Capacity Weighted Distance or Postage Stamp, is more relevant to the current state and use of the NTS

Sensitivity Analysis – Appendices

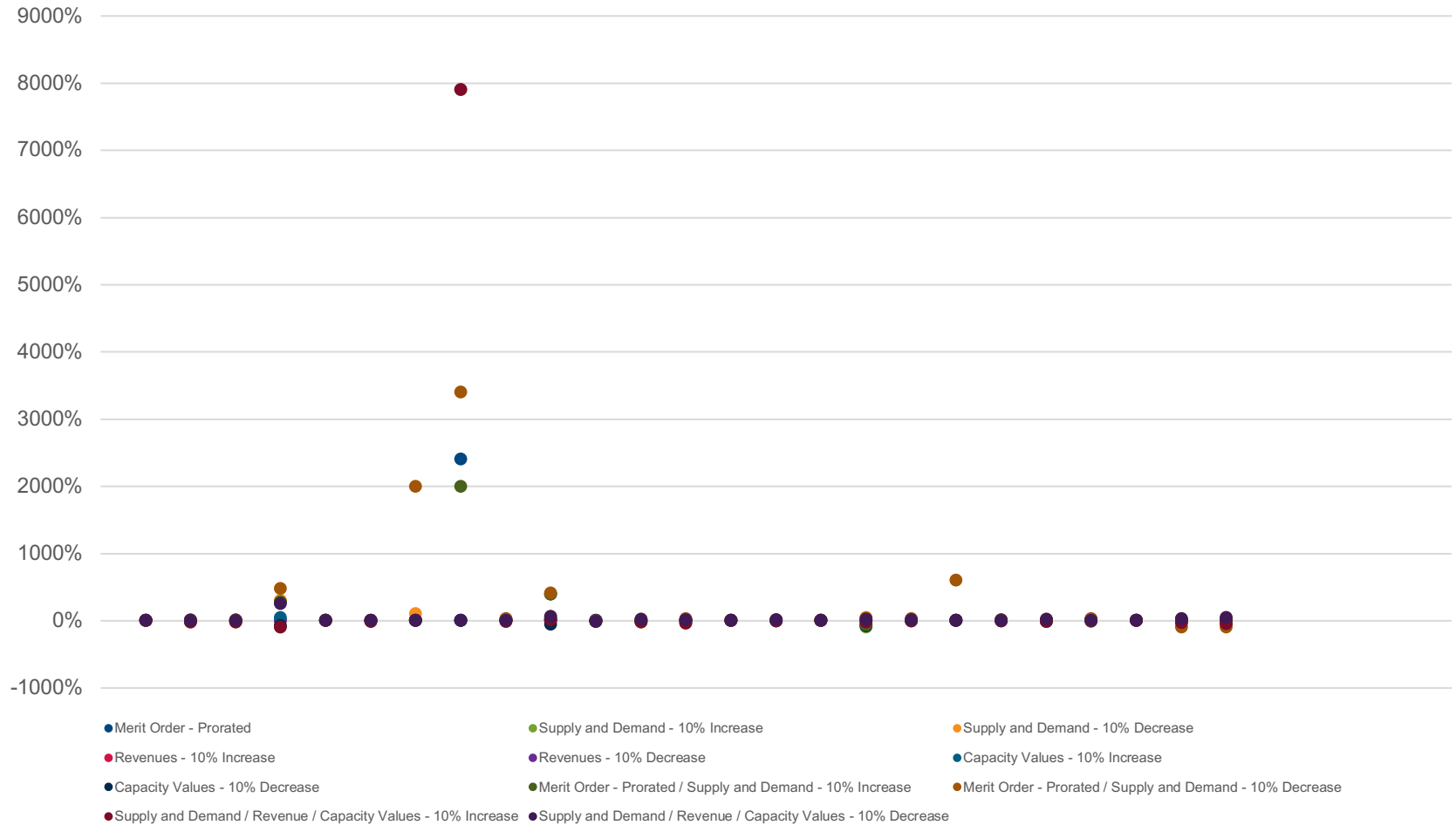
- Appendices include:
 - Modelling Assumptions
 - LRMC Sensitivity Analysis – price changes for entry and exit points
 - CWD Sensitivity Analysis – price changes for entry and exit points
 - Postage Stamp Sensitivity Analysis – price changes for entry and exit points

Appendices: Modelling Assumptions

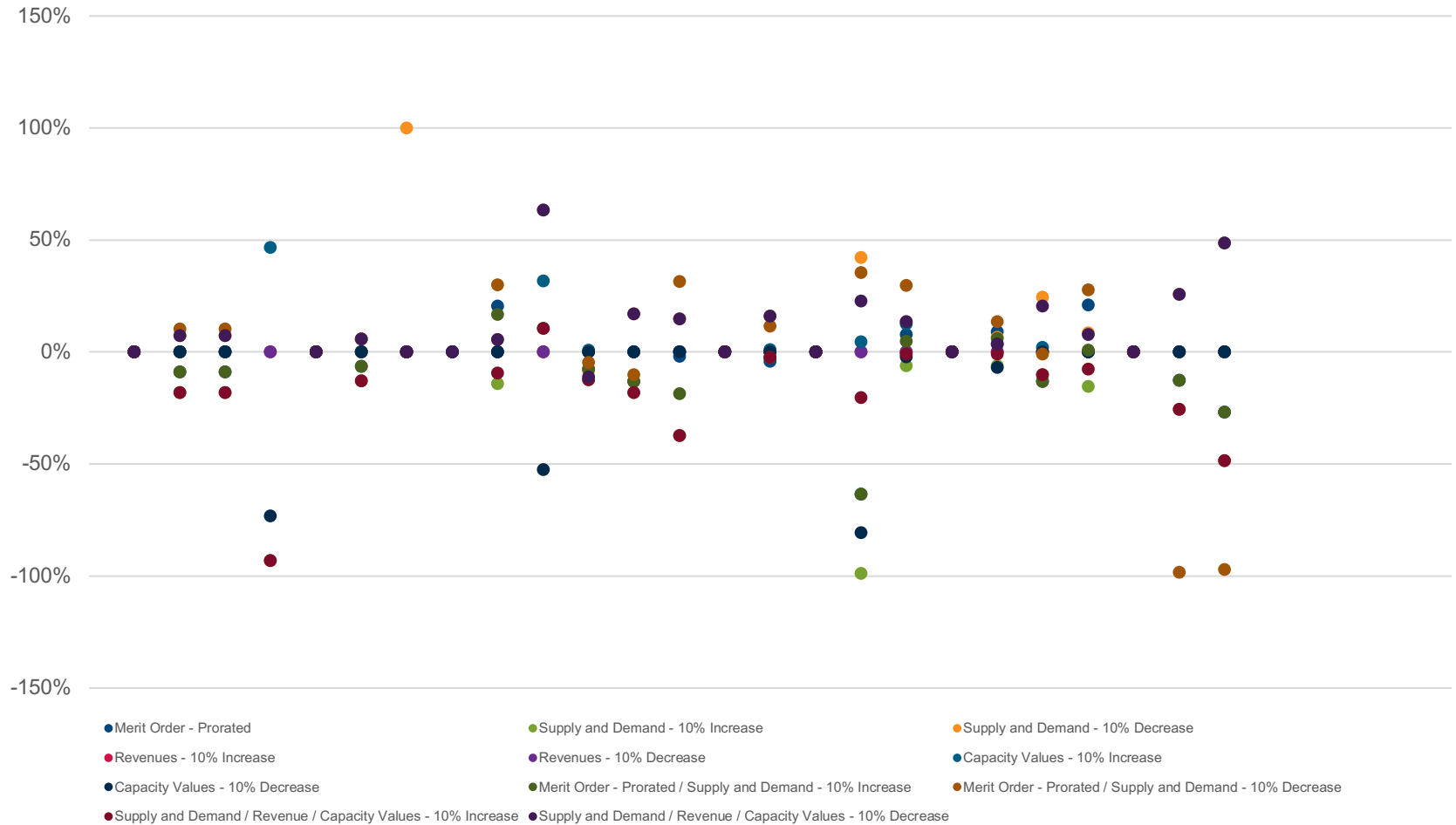
- LRMC
 - Model used: 2017 Exit Transportation Model
 - inputs:
 - Total Supply and Demand: 5654.78
 - Annuitisation Factor: 0.10272
 - Expansion Constant: 2918
 - Target Revenue: £358m
 - Total Exit Capacity (TO Baseline): 9,678 GWh
 - Total Entry Capacity (Obligated): 10,956 GWh
- CWD / Postage Stamp
 - CWD v2.2 and Postage Stamp v2 used
 - Base inputs:
 - Gas Year: 2017/18
 - Revenue: £795m
 - Total Exit Capacity (Obligated): 9,753 GWh
 - Total Entry Capacity (Obligated): 10,956 GWh

Appendices: LRMC Analysis Charts

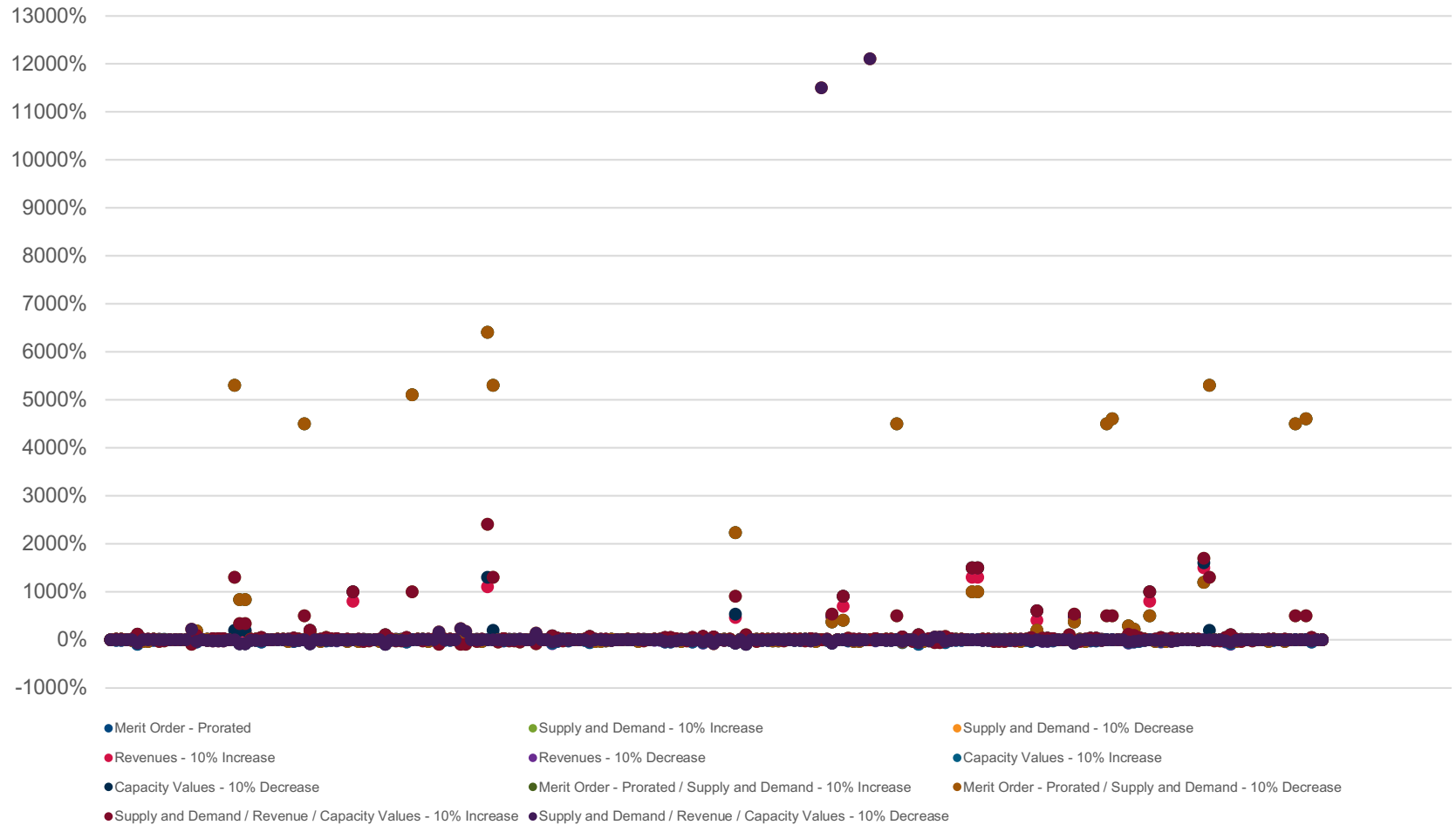
Appendices: LRMC – Entry Price Changes



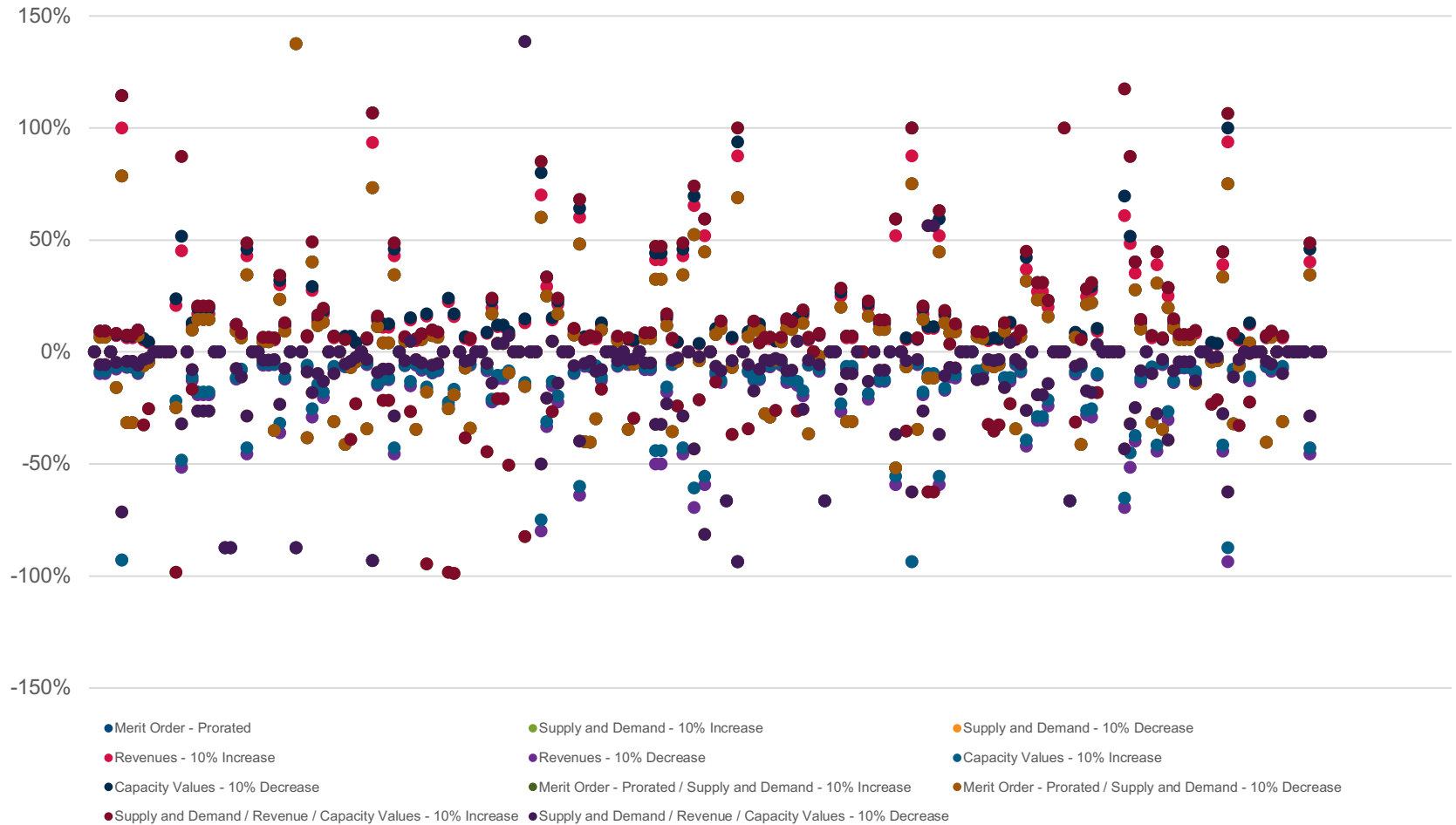
Appendices: LRMC – Entry Price Changes (capped at +/- 150%)



Appendices: LRMC – Exit Price Changes

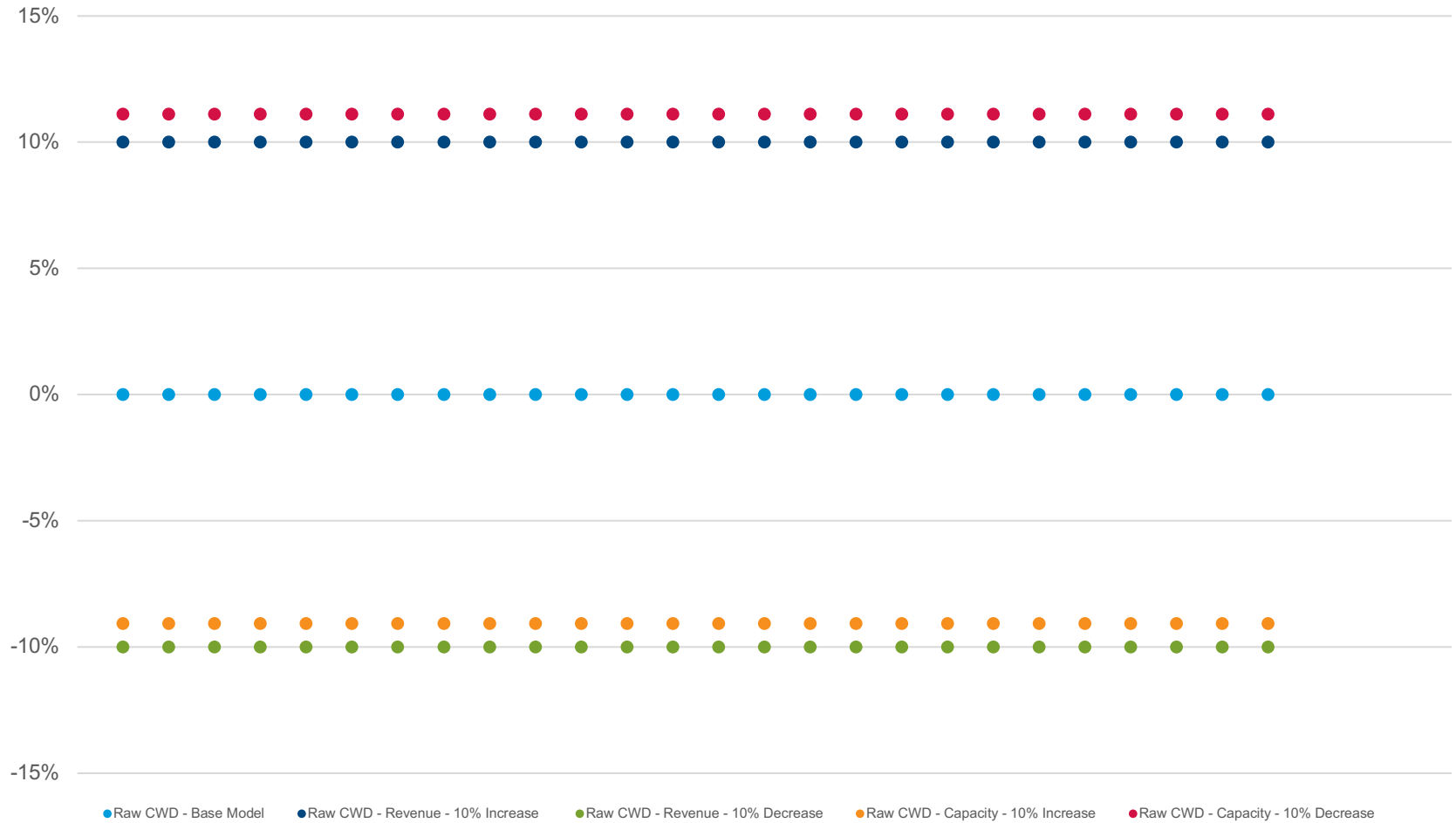


Appendices: LRMC – Exit Price Changes (capped at +/- 150%)

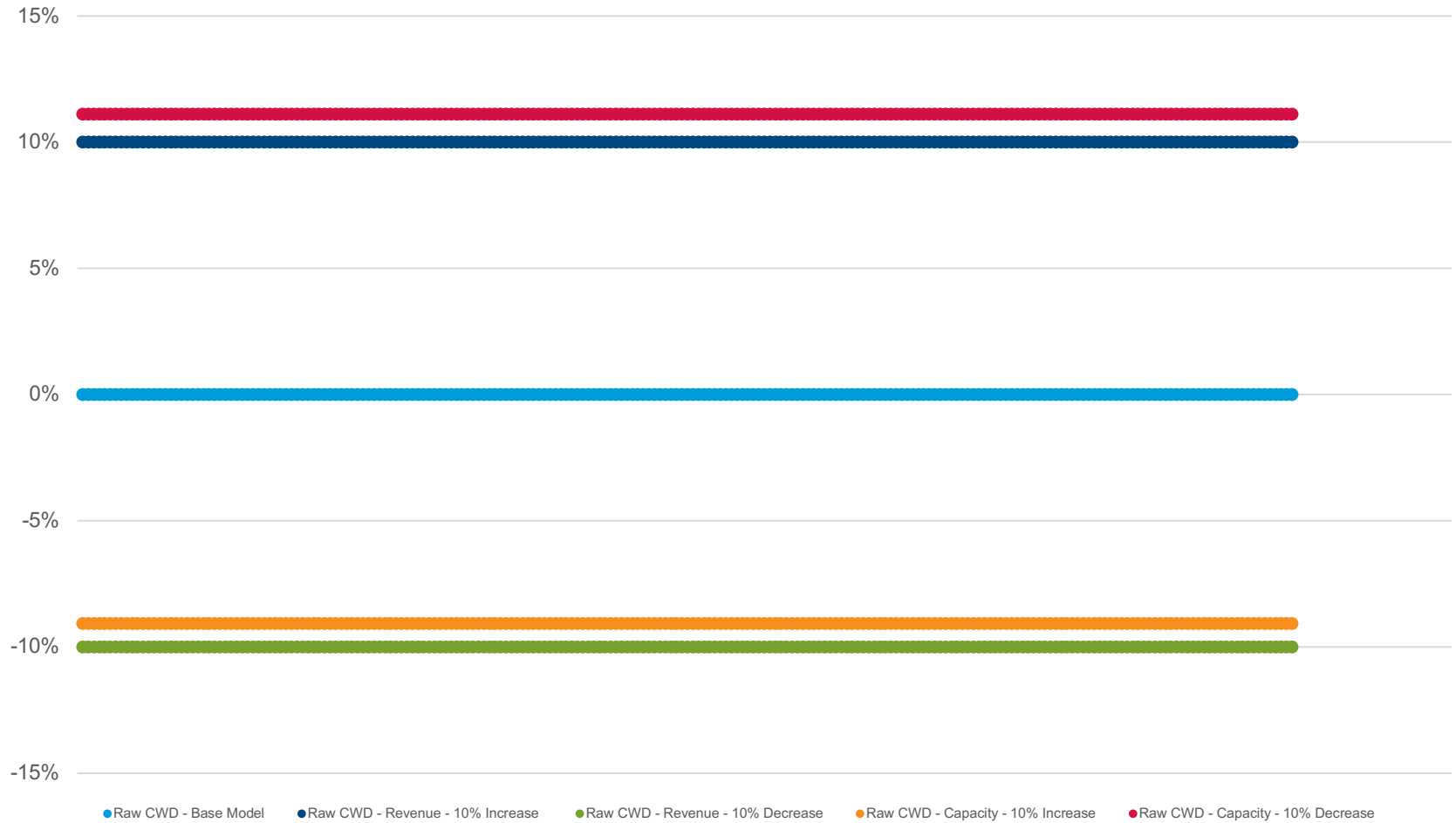


Appendices: CWD

Appendices: CWD – Entry Price Changes

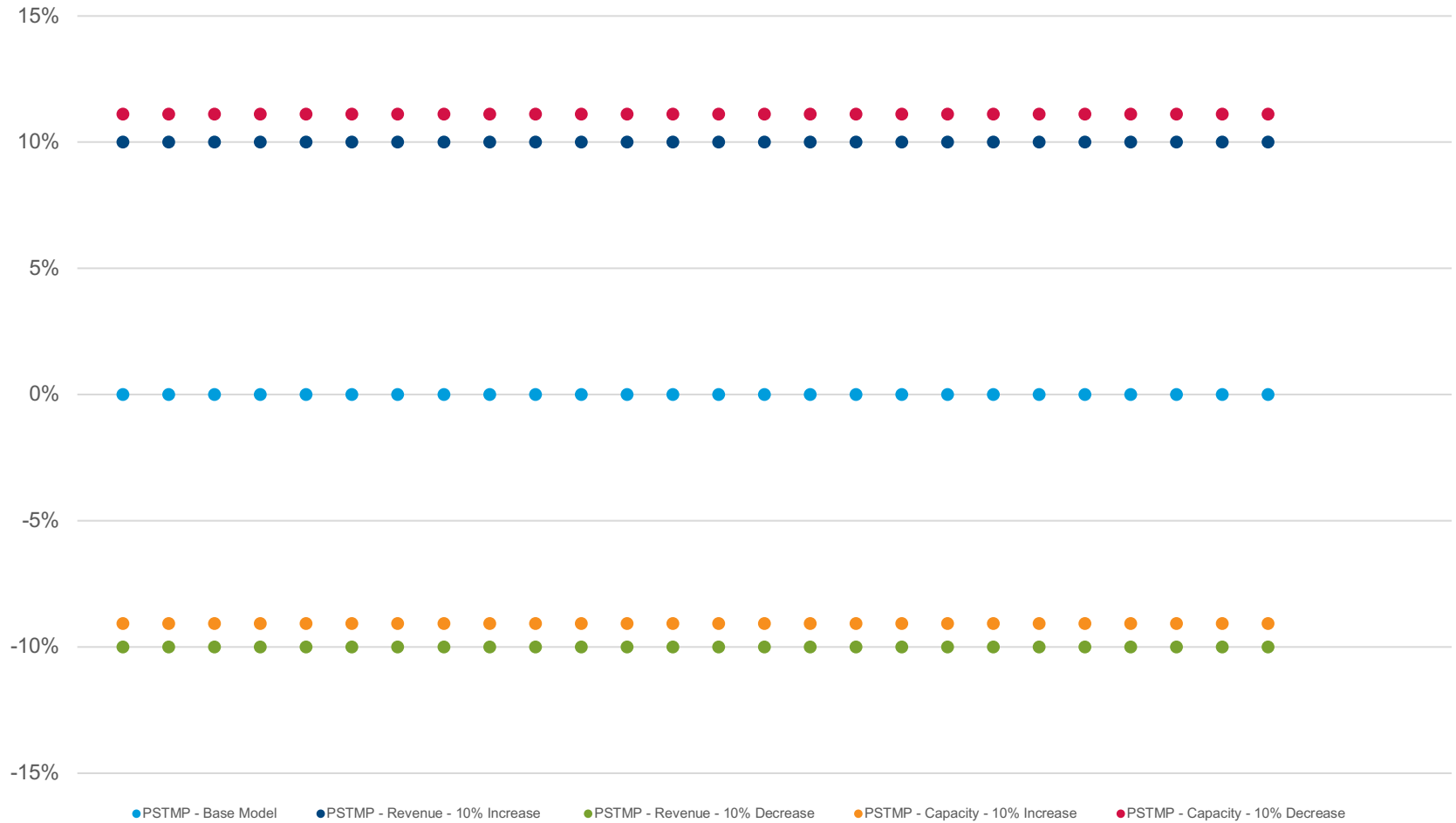


Appendices: CWD – Exit Price Changes



Appendices: Postage Stamp

Appendices: Postage Stamp – Entry Price Changes



Appendices: Postage Stamp – Exit Price Changes

