



Energy Price Risk Management – Slough Borough Council

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**Pushing the
boundaries in
energy design**

Overview

Slough Borough Council (Slough) currently spend approximately £2.1m per year on gas and electricity, across Corporate, housing and street lighting assets. Due to unprecedented energy market price rises, Slough are looking at a potential 49%/£1.09m increase on their April 2022 renewals.

Product	Apr-21	Apr-22*	Apr-23*	Apr-24*
Gas	£287,500	£550,908	£423,258	£370,358
NHH	£322,000	£453,066	£388,436	£372,796
HH	£1,118,000	£1,603,771	£1,362,111	£1,303,631
UMS	£364,000	£512,161	£439,101	£421,421
	£2,091,500	£3,119,905	£2,612,905	£2,468,205
		49.2%	24.9%	18.0%

*Data accurate as of 3rd November

Slough are therefore reviewing alternative purchasing strategies to help mitigate against this price increase, while retaining budget stability and remaining compliant.

This paper summarises how Beond can deliver commercially advantageous and compliant procurement for renewals due 1st April 2022 as part of a wider cost avoidance program that is aligned with Slough's Asset Disposal Strategy.

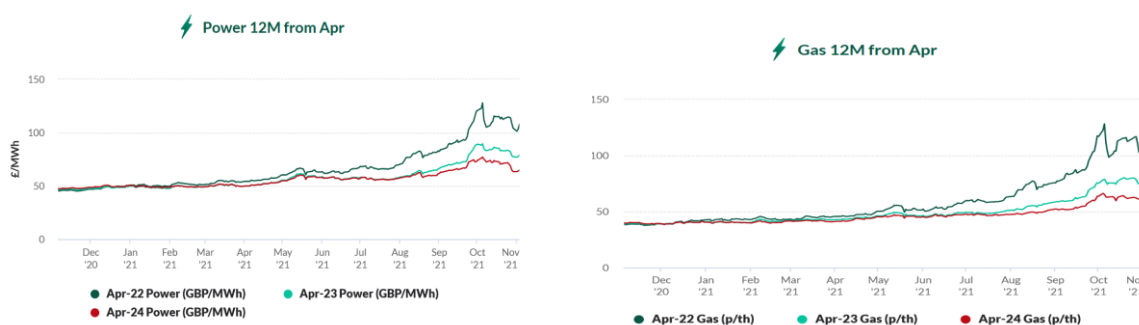
Cost Avoidance Program

Beond will deploy the following strategies to mitigate against the forecasted energy cost increases:

1. **Price Risk Management**- Source and deliver appropriate energy purchasing strategies for the varying stock within Slough's portfolio.
2. **Volume Risk Management**- Negotiate appropriate supply contract terms and conditions to avoid volume tolerance issues that may result from the Asset Disposal Strategy.
3. **Data Risk Management**- Create a meter level asset database to keep all meters on contract, and remove any disposed sites/meters in a timely fashion to ensure Slough only pay for what they use.

Price Risk Management- Energy Markets Overview

The below charts summarise the 12 month April contracts for 2022, 2023 and 2024 for gas and power as of the 1st November.



Energy prices rocketed in Q3/21 due to winter supply crunch fears driven by:

- A colder Spring in Europe resulted in gas injection into storage being delayed
- A colder Spring in Asia resulted in the re-direction of gas (LNG) to those markets

- Lower flows of Russian gas perpetuated low levels of gas during the summer/autumn
- Carbon prices reached an all-time high in Q3
- An interconnector fire in Kent which caused the loss of 1,000MW of capacity

Outlook

- Russian rhetoric and low gas flows continue to driver price volatility, despite UK market fundamentals being strong.
- A sustained milder winter is essential to see significant price retracement.
- Carbon prices have receded but remain high.

The cost and decision making challenge that Slough face is unpalatable. Market fundamentals suggest that energy markets will retrace, but when and how far? No one knows. It is for this reason that Beond supports Slough's view to review their purchasing strategy.

Price Risk Management – Purchasing Strategies

Beond has five purchasing strategies, which are defined in Item 1 in the appendix.

1. **Fixed+ Risk**
2. **Day Ahead/Spot price**
3. **Month Ahead Market Tracker**
4. **Dynamic Forward Hedging**
5. **Synthetic Caps (triggers)**

To help Slough navigate the complexities of purchasing energy flexibly, Beond would typically run a risk workshop. The primary aims of the risk work shop would be;

1. To educate key stakeholders on the strategies and the associated risks/rewards
2. To look at case studies and back testing to see how each strategies works in reality
3. To outline a risk policy to define the agreed purchasing strategy and associated operating procedures

To aid Slough decision making at this stage, Beond will provide an outline in this document on some of the subject matter discussed in the risk workshop.

The below table is a summary of the performance of each of the above strategies between 2009 and 2018 for a client that uses 20MWhs per annum on electricity.

Variable	Fixed	Spot Price	Month Ahead	Dynamic Forward Hedging	Seasonal Synthetic Caps (+10%)*
Annual Average between 2009-2018	£4,023,480	£3,845,786	£3,967,186	£3,992,678	£3,883,358
Standard Deviation	£522,142	£511,649	£548,908	£341,374	£440,784
Winter Max Annual outturn	£5,055,523	£4,274,965	£4,903,910	£4,609,114	£4,594,262
Summer Max Annual outturn	£4,762,685	£4,794,097	£4,760,389	£4,366,819	£4,321,025

(Note: To calculate the Volume for each season we multiply 20 MW by the number of hours (24) and days (182 – winter or 183 - summer). We then multiple by the relevant wholesale price (as presented on the previous slide) to get the Cost. The break down per season can be found in the appendix, Item 2.)

This data suggests that between 2009-2018, buying energy on the spot market (1 day prior to delivery) was the most economically advantageous purchasing strategy. Buying fixed price energy was the worst performing strategy over the same time frame.

However, historic purchasing performance is not a guarantee of future strategy performance. Indeed, Beond is yet to carry out back testing for 2021, but we have enough evidence to suggest a fixed price strategy for an April 2021 renewal would deliver significant benefits against the majority of the strategies listed above.

This is ultimately the challenge for Slough, making the most informed decision for the next contract without knowing exactly what the future holds.

Beond’s Purchasing Strategy Recommendation

Beond recommend deploying a hybrid strategy due to the unprecedented markets currently, with a blend of the fixed price, month ahead and dynamic forward hedging strategies across the different Slough assets. That is, an initial strategy to navigate the current market conditions, and a subsequent strategy to manage the future risks. The following is the high level proposal, subject to review by Slough;

Housing Stock

1. Beond recommends running a fixed price reverse auction to procure up to 3x12 month fixed priced supply contracts to provide 3 years of budget certainty, while remaining compliant of section 20.

Street Lighting

2. Beond recommends running a fixed price reverse auction to procure fixed priced supply contracts to provide up to 3 years of budget certainty.

Corporate Stock

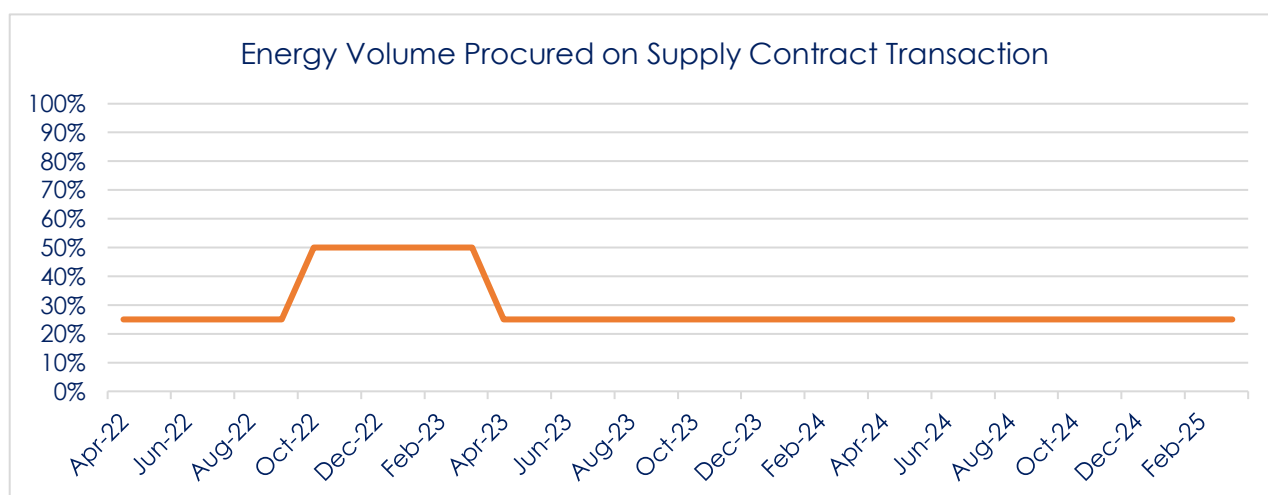
3. Electricity: Beond recommends running a flexible supply contract reverse auction for Slough to purchase a 3 year flexible supply contract
 - a. This provides a 36 month window to trade within
4. Gas: Beond recommends running a fixed price reverse auction to procure fixed priced supply contracts to provide up to 4 years of budget certainty.
 - a. Specific terms would be negotiated on volume tolerance

Corporate Stock- Electricity: Wholesale Purchasing Strategy

On transaction of the electricity flexible supply contract;

- Slough to purchase 100% of the non-commodity costs
 - Non-commodity costs account for at least 60% of your bill, acting as a natural hedge
- Slough to purchase 25% of the first 6 months of the forecasted electricity consumption
- Slough to purchase 50% of the second 6 months (the winter period) of the forecasted electricity consumption
- Slough to purchase 25% of years 2 and 3 forecasted electricity consumption

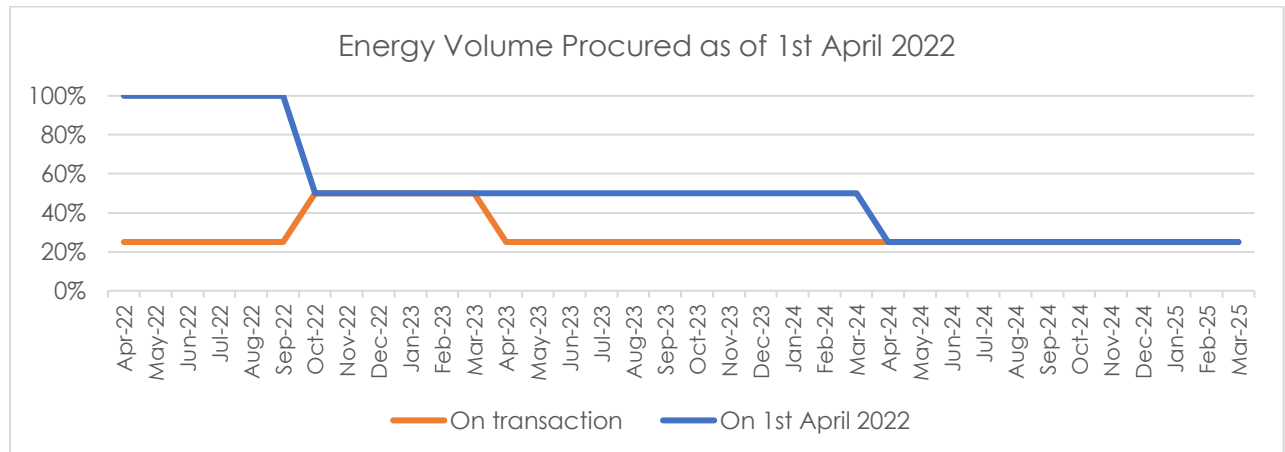
The chart below summarises the above strategy as on the supply contract transaction date.



The following passive purchasing strategy will continue from the transaction date of the supply contract through to the end of the contract;

1. to purchase the remaining volume of the first 6 months of year 1, 1 month prior to delivery
2. to purchase the remaining volume of the second 6 months of year 1 (the winter period), 3 months prior to delivery
3. to purchase an additional 25% of years 2 and 3, 12 months prior to delivery
4. to purchase the remaining volume of year 2, 6 months prior to delivery
5. to purchase the remaining volume of year 3, 6 months prior to delivery

The below line chart summarises the purchasing strategy position as of the 1st April 2022.

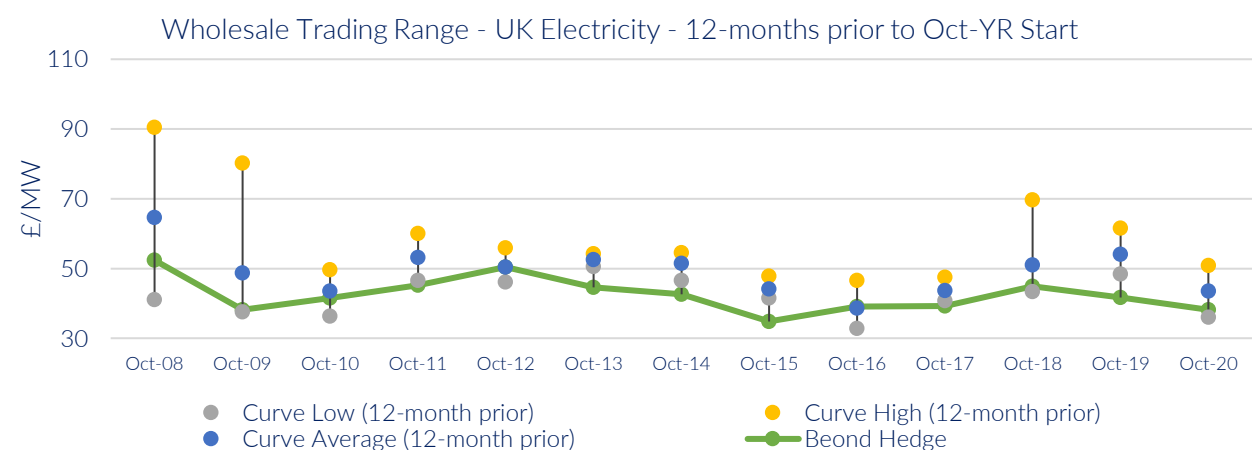


Beond would continue to be opportunistic and where we see value in the market outside of the above purchasing strategy, Beond would contact Slough with clear reasoning of why Slough should consider altering the existing purchasing strategy. An example would be to purchase an additional 50% of year 2, 12 months prior to delivery due to exceptionally low prices, rather than 25%, as per the above policy.

Beond's Buying Evidence

As an energy price risk management expert, Beond is proud to have helped it's clients buy below the market average consistently over the last 12 years, clearly showing a high level of commercial competence.

The below graph outlines Beond's wholesale trading performance, with Beond **delivering 11.4% advantage against the 12 month curve average**.



As a comparison, LASER promotes a market performance of 4.7% for a similar period (2009-2013). Please [see page 5 on the following link](#). As such, historically Beond has delivered an improved price advantage and their wholesale purchasing flexibility is more aligned with helping Slough navigate the existing market conditions while the Asset Disposal Strategy is defined.

Additional to managing the price risk, Beond will support Slough in the following areas to maximise cost avoidance opportunities.

Volume Risk Management

Slough intends to carry out an asset disposal strategy to reduce costs across the council. Slough are currently working through this strategy and do not yet have a clear time line on which assets will be disposed of and when. As such, it is imperative that Beond negotiate appropriate supply contract terms and conditions to avoid volume tolerance from Slough purchasing more energy than they actually need.

Risk Management strategy- where Slough has visibility of future asset disposals, Beond would collaborate with key stakeholders to understand the volumes concerned. We would then ensure we buy the minimum volume required for those sites, without risking price stability. There are a number of flexible supply contract products that enable volume reforecasting if demand destruction is identified early enough.

Contracted Volume Tolerance- Beond would negotiate wide volume tolerance levels in the supply contract. Typically, these are 85%/115% of expected usage, but we have experience of widening this range to 70%/130% and in some cases, removing the clause completely. Where this is removed completely, the supplier takes all the volume and pricing risk.

Consumption Monitoring- Beond would request access to your consumption data either via the energy supplier, or directly with the DA/ DC provider. Where we can communicate directly with the DA / DC provider, Beond has the technical capability (API) to pull the consumption data directly into your client portal. Once we have direct access, we can set up 'alarms' to raise awareness of consumption patterns that are out of tolerance. This is then used to manage the reforecasting of future energy volumes.

Data Risk Management

In order to ensure Slough only pay for what they use, Beond will create a meter level asset database to keep all meters on contract, and remove any disposed sites/meters in a timely fashion. This database will be used to cross check against energy supplier invoices as part of Beond bill validation service.

Beond's bill validation system builds a simulation of the supply contract at meter level based on the consumption data, contract rates, wholesale purchases and network / pass-through costs. The system can then simulate the cost for each meter over each period providing forecasting and accrual management capability.

There can be up to seventy-five separate checks on each invoice, but the typical process checks are summarised in Item 3 in the appendix.

Following the validation exercise, the system creates an invoice validation summary report that outlines at meter level, cost items approved for payment, and costs items on hold due to an outstanding error. A consolidated billing report accompanies this submission.

The outstanding errors identified by the system are either reviewed and resolved by a Beond Bureau Analyst or sent direct to the relevant energy supplier. Beond manage this process through to resolving incorrect invoices with the supplier.

Budget Forecasts

Slough will look to dispose of council assets while deploying a risk management utility contract strategy in order to meet budget expectations. As a reminder, the proposed energy risk strategy is to fix the NHH and UMS supplies, and purchase HH and gas flexibly.

Beond has modelled two scenarios;

1. 10% energy consumption reduction of the corporate stock (Gas and HH)
2. 20% energy consumption reduction of the corporate stock (Gas and HH)

These 2 scenarios were then applied across 3 different wholesale market outcomes;

1. **Best case**- 60% decrease in wholesale energy costs, compared to the forecasted budget
 - a. *The market has a long way to fall in our view.*
2. **Expected case**- 25% decrease in wholesale energy costs, compared to the forecasted budget
 - a. *Through general market easing and risk managed purchasing.*
3. **Worst case**- 20% increase in wholesale energy costs, compared to the forecasted budget
 - a. *Still potential for unforeseen infrastructure issues, prolonged cold snaps and political unrest*

Scenario 1- The below table compares the fixed price budget forecast when a 10% reduction in energy consumption is applied to the corporate stock, across 3 different wholesale market outcomes.

<u>Scenario</u>	<u>Apr-22</u>	<u>Apr-23</u>	<u>Apr-24</u>	<u>3 Year Annualised</u>
Fixed Price Forecast	£3,119,905	£2,612,905	£2,468,205	£2,733,672
Best Case	£2,175,896	£1,905,255	£1,831,838	£1,970,996
Expected Case	£2,600,878	£2,213,904	£2,105,403	£2,306,728
Worst Case	£3,147,284	£2,610,739	£2,457,129	£2,738,384

Scenario 2- The below table compares the fixed price budget forecast outturn when a 20% reduction in energy consumption is applied to the corporate stock, across 3 different wholesale market outcomes.

<u>Scenario</u>	<u>Apr-22</u>	<u>Apr-23</u>	<u>Apr-24</u>	<u>3 Year Annualised</u>
Fixed Price Forecast	£3,119,905	£2,612,905	£2,468,205	£2,733,672
Best Case	£2,041,377	£1,785,508	£1,716,547	£1,847,811
Expected Case	£2,419,139	£2,059,863	£1,959,715	£2,146,239
Worst Case	£2,904,833	£2,412,606	£2,272,361	£2,529,933

The below table summarises the forecasted percentage saving split scenario reduction across 3 different wholesale market outcomes, compared to the fixed price budget forecast.

<u>Scenario</u>	<u>10% reduction</u>	<u>20% reduction</u>
Best Case	27.9%	32.4%
Expected Case	15.6%	21.5%
Worst Case	-0.2%	7.5%

Appendix

Item 1- Risk Managed Purchasing Strategies

Beond has five purchasing strategies, defined as;

1. **Fixed+ Risk-** Fixed price supply contracts (1 to 5 year contract durations) with monthly risk management reports to manage market timing of the renewal
 - This strategy creates budget certainty but restricts purchasing flexibility
2. **Day Ahead/Spot price-** A passive strategy where you pay the price calculated by the market a day before delivery.
 - Historically this strategy delivers savings compared to longer-term purchases, but it is a high-risk strategy.
3. **Month Ahead Market Tracker-** A strategy where you purchase 25/50/75% of your volume on transaction of the supply contract, purchasing the remaining volume for each month, 1 month ahead of delivery.
 - This strategy historically has shown savings compared to longer-term purchases but it is medium to high risk, especially during winter.
 - It is possible to purchase more than 1 month ahead if pricing is favourable
4. **Dynamic Forward Hedging-** A strategy where you always have 100% of your forecasted energy demand purchased at least 6 months ahead of delivery, with the subsequent period purchased automatically at each 6-month trigger point.
 - This can be reduced to 3 months ahead or extended to 9 or 12 months
 - A lower risk than fixed price strategies, but you may still pay a premium to fix long-term costs
5. **Synthetic Caps (triggers)-** Actively protects costs with a pre-agreed response to rising prices (aka a stop-loss strategy)
 - Gives a 'fixed worst case' cost while allowing the client to benefit from prices falling.
 - Seasonal caps can be changed to monthly caps closer to delivery to benefit from further price declines within-season.

Item 2- Back testing data set

£/MWh	Spot Price	Month Ahead	Dynamic Forward Hedging	Seasonal Synthetic Caps (+10%)*	6M Fix
Win 2009	£3,049,943	£3,163,853	£3,647,571	£3,364,234	£3,364,234
Sum 2010	£3,424,173	£3,440,095	£3,666,442	£3,193,862	£3,193,862
Win 2010	£4,081,220	£4,061,339	£3,642,330	£3,700,657	£4,025,549
Sum 2011	£4,330,834	£4,401,153	£3,899,510	£3,513,249	£4,762,685
Win 2011	£3,978,648	£4,197,724	£4,148,435	£4,428,104	£5,055,523
Sum 2012	£3,810,382	£3,805,912	£3,961,584	£3,928,205	£3,928,205
Win 2012	£4,189,238	£4,249,475	£4,419,542	£4,177,555	£4,177,555
Sum 2013	£4,439,023	£4,280,823	£4,366,819	£4,321,025	£4,409,568
Win 2013	£4,183,781	£4,511,835	£4,609,114	£4,594,262	£4,594,262
Sum 2014	£3,382,712	£3,507,498	£4,100,078	£3,962,462	£3,962,462
Win 2014	£3,722,935	£3,950,399	£4,353,440	£4,288,502	£4,288,502
Sum 2015	£3,582,121	£3,660,749	£4,019,851	£3,687,523	£3,687,523
Win 2015	£3,178,977	£3,305,447	£4,249,482	£3,865,680	£3,865,680
Sum 2016	£3,044,574	£3,069,802	£3,583,286	£3,099,874	£3,099,874
Win 2016	£4,248,571	£4,903,910	£4,097,475	£4,138,243	£4,138,243
Sum 2017	£3,507,950	£3,638,399	£3,445,670	£3,409,861	£3,549,614

Win 2017	£4,274,965	£4,500,543	£4,108,832	£4,322,573	£4,322,573
Sum 2018	£4,794,097	£4,760,389	£3,548,736	£3,904,576	£3,996,720
Average	£3,845,786	£3,967,186	£3,992,678	£3,883,358	£4,023,480
Standard Deviation	£511,649	£548,908	£341,374	£440,784	£522,142
Win Max	£4,274,965	£4,903,910	£4,609,114	£4,594,262	£5,055,523
Sum Max	£4,794,097	£4,760,389	£4,366,819	£4,321,025	£4,762,685

Item 3- Bill Validation Checks

- Check all meters have been billed
- Check all credit notes are netted off against invoices
- Check bill start and end dates for no over-lapping days or missing days
- Check meter readings from one bill to the next
- Check billed usage against historical usage (at time of tender)
- Check billed usage against half-hourly data (including AMR)
- Check billed kVA levels (HH electricity only)
- Check unit rate(s) p/kWh
- Check standing charge £/mth
- Check kVA charge £/kVA/mth
- Check CCL (including the discount for sites that have a CCA in place)
- Check correct VAT rate (including 5% applied when De Minimis usage triggered)
- Check calculation of correct total

Cleaner Energy for Less

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