

The Landfill Allowance Trading Scheme (LATS): Managing uncertain risks



Funded by DEFRA's Waste Implementation Programme Local Authority Support Unit under the 2004/5 consultancy programme



The project

The trading of landfill allowances under LATS entails risks of a type and order not previously experienced by local authorities. The cost or benefit of LATS to individual authorities will depend on a list of unknowns or uncertainties that vary to a greater or lesser degree depending on local circumstances. Waste Disposal Authorities are asking:

- At what rate will waste arisings grow?
- How much will permits trade for?
- Will we exceed, meet, or exceed our landfill allowances?
- Will there be a shortage or excess of permits in the market?
- How will investment in new capacity cost effectively reduce the liability or increase the income from LATS?
- What is the impact of planning delays or late delivery?

Providing answers to these questions would allow WDAs to better manage the risks and

opportunities presented by the introduction of LATS. Under the DEFRA WIP LASU programme, Urban Mines Ltd, the environmental charity and consultancy, has been able to develop a process, utilising DEFRA's M-BEAM model, to incorporate different aspects of uncertainty. The modelling process was developed for the particular local circumstances of a consortium of four local authorities who share capacity at a centralised Energy from Waste facility that recovers energy from 70% of their waste. Although they are likely to be clear beneficiaries from the LATS scheme, we worked with them to assess their preparedness for LATS as well as identifying and quantifying their likely income and associated risks. Three aspects of uncertainty were modelled:

- MSW growth rates,
- achieved recycling rates,
- and EfW downtime.

Barriers to improved performance

Preparedness for LATS

Given the positive position WDAs with EfW plants find themselves in, perhaps a degree of complacency should have been expected,

but this positive position does not appear to be speeding up decision making with regard to formulating a LATS strategy. Following discussions with the waste and finance



managers in the partner authorities, it was clear that waste managers were knowledgeable about LATS but that they had not seriously considered the requirement for a LATS trading strategy. Finance officers knew little or nothing about the scheme and there was only limited evidence of collaboration between the two departments on this subject.

Views on how their allocations should be managed were mixed. They had not decided or agreed how trading might work. There were various views about how the funds from permit sales would be used with some arguing for the funds to be ring fenced for the waste management function and others for the funds returning to a central pot. It was clear though that some of the waste officers were nervous at the prospect of taking responsibility for trading permits. For example, if permits were sold one week at £35 and the following at £45, that they could

somehow be held responsible for the “worse” trade.

For LATS to deliver cost savings, participants in the market place must consider relative marginal costs of the different diversion options and compare them to the prevailing market price. However, such thinking was generally absent from discussions. In particular, no consideration had been given to how the authorities could benefit should they decide to increase recycling if, say, the capacity of the EfW plant was exceeded (as the analysis suggested could happen in the next few years). This could simply be because the authorities are in a positive position and there has seemed to be no need to date to consider the point in detail. However, the quantitative modelling did demonstrate that, without a coherent strategy, the potential gains from permit sales could be hit dramatically and significantly by plant downtime and capacity issues.

Overcoming these barriers to improved performance

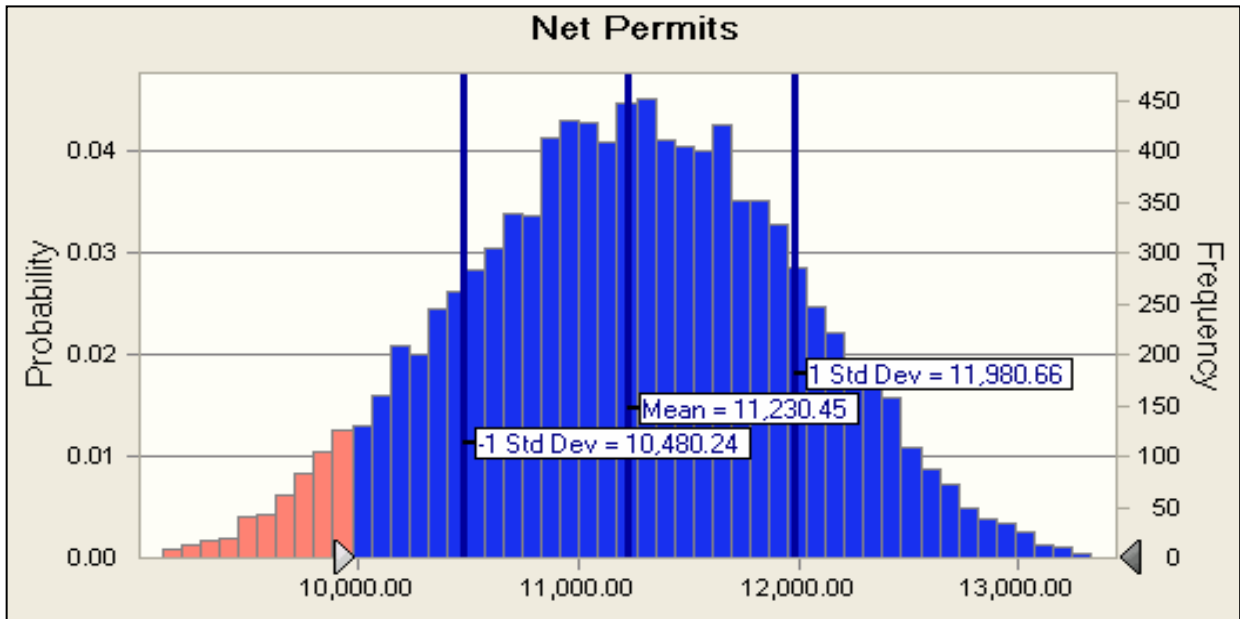
It is clear that even authorities with EfW facilities and the subsequent positive permit position, need joint LATS strategies to manage their risks and fully utilise the potential benefits that LATS can provide. The benefits arise from the potential to:

- Minimise transaction costs
- Correctly manage the permit allocation against overselling
- Correctly manage the permit allocation against EfW plant downtime and issues of capacity limits
- To compare the timing and costs of alternative landfill diversion options against prevailing spot and forward permit prices

Modelling LATS Uncertainty and Sensitivity

Common with many authorities, this group needed to examine the impact of key areas of uncertainty within LATS but did not know how. Urban Mines developed a methodology to analyse the uncertainties inherent in a market for tradable permits, using well-established risk analysis techniques.

The model developed was designed to be able to take account of uncertainty with respect to key parameters such as the growth in waste arisings, recycling rates, and plant downtime. Uncertainty in permit prices was not modelled at this stage, as the market had not commenced at the time of the analysis. Permit pricing will be modelled in future



analyses. To incorporate the analysis of uncertainty the methodology used “Monte Carlo Analysis” to assign probability distributions to the uncertain variables. This in turn allowed sensitivity analyses to be run to highlight those factors that most affect the final net permit position. The sensitivity analyses were designed to illustrate those parameters that can be influenced by policy and reduce risks as well as highlight when better data is most valuable. The model developed used Defra’s M-BEAM model for the baseline data and added important functionality. Rather than taking single estimates for the uncertain variables to generate a single conclusion as in M-BEAM, the Urban Mines methodology runs many thousands of such models reflecting the range of possible values for the uncertain variables to quantify probable outcomes. A simple example of the type of output this method can produce is discussed below.

The number of net permits using M-BEAM produced a point estimate of 11,200. Incorporating uncertainty into the analysis shows the range of possible outcomes in terms of probabilities. The most likely

outcome is still around 11,200 permits but in a range below 10,000 to over 13,000. Further, it shows that there is a 94.38% probability that the shortfall will exceed 10,000 but only 15.34% that it will exceed 12,000. This can provide significant aid when refining purchase/sell strategies as well as providing certainty on contingency positions should an authority adopt one. The output from this type of analysis can be presented graphically as above.

In this case, using “what-ifs” in the developed model identified a number of vital issues:

- That the benefit to the sub-region over the lifetime of the LATS targets was significant. However, the range of benefits was wide and a joint strategy was needed to ensure the opportunities presented by LATS are maximised
- That downtime at the shared Energy from Waste (EfW) plant has a significant effect on the positive outcome in terms of net permits. For instance, analysis revealed how critical the timing of the next major EfW plant refurbishment was on potential

LATS income. Operationally, the next refurbishment was planned for the 2009-2010 LATS target year, which in itself posed considerable risks, but analysis revealed that this shutdown would cost the authorities up to £3 million in foregone income from permit sales. More routine planned and unplanned shutdowns would also have a significant effect on potential LATS income. Any foregone income also needs to be equitably allocated amongst the four partner authorities.

- That increased waste arisings were likely to mean that plant capacity will be exceeded in the short to medium term, (even taking into account forecast improvements in recycling) and that this would cost the authorities between £1.5m and £3m in lost revenue from permit sales, each year from 2008 onwards.

That LATS may not produce as much income as expected requires a response from the four authorities. The potential for foregone

income mentioned above needs to be considered in relation to options that will reduce the risk that income will be foregone. Despite always being in a net selling position, it may still be more cost effective to, say, increase recycling than accept that the LATS income will not materialise. Being in a strong position is not an excuse for not analysing relative marginal costs of options.

Overall, this method allows the creation of a clear LATS strategy by bringing the analysis of uncertainty into the decision making process. LATS strategies also need clarity for those carrying out trading so that they are not held back from trading by procedural uncertainty. Guidance has recently been produced by DEFRA on trading, banking, and borrowing that includes a section on developing a LATS strategy.

Authorities need to assess the risks fully and consider what risks are acceptable. The marginal costs of alternative diversion options must be compared to permit prices.

Specifically what not to do

Even for those authorities in the positive net permit position of this study, doing nothing will be a costly option. More specifically, authorities must resist the temptation just to

look at diversion costs and instead compare them to spot and forward permit prices in order for gains from LATS to be realised.

Conclusion

Some commentators believe that uncertainty could have a negative impact on the market for LATS. However, despite all the existence of uncertainty in elements of the LATS scheme and the problems it produces, this work has shown how the risks can be quantified and managed.

Authorities with EfW are in a strong position with regard to LATS. Given they have spare permits for the life of the scheme, EfW authorities are also important for the liquidity of the market. For the market to succeed they need to look at obtaining best value for themselves by considering spot and forward trades. They are better able to manage their



risks given the framework described in this report.

The recommendations developed from this analysis included:

- The need for agreement between the partner authorities on a clear LATS strategy to get maximum value from permit sales
- The need for joint trading of the permits from the four-partnered local authorities, to give flexibility and lower uncertainty, as well as minimising transaction costs. The allocation of the “pain” of foregone income from plant downtime, naturally throws them together for a joint strategy
- The need to agree a maintenance strategy with the operators of the EfW plant that will minimise downtime and avoid target years for major downtime.
- The need to address the issue of lack of EfW capacity via recycling and waste minimisation strategies by considering the cost effectiveness of increasing recycling and compost making or negotiating additional capacity with the operator.
- To maximise the benefits of LATS in all cases, the authorities must compare the additional (marginal) costs of downtime or increasing recycling rates or waste minimisation schemes with the value of the gained or foregone permit sales

Project team

Project Manager: Peter Scholes

Environmental Economist: Glyn Jones

Urban Mines The Cobbett Centre Norwood Green Halifax HX3 8QG	Waste Implementation Programme Local Authority Support Unit Ashdown House 123 Victoria Street London SW1E 6DE
Tel: 01274 699 400 info@urbanmines.org.uk www.urbanmines.org.uk	http://lasupport.defra.gov.uk

