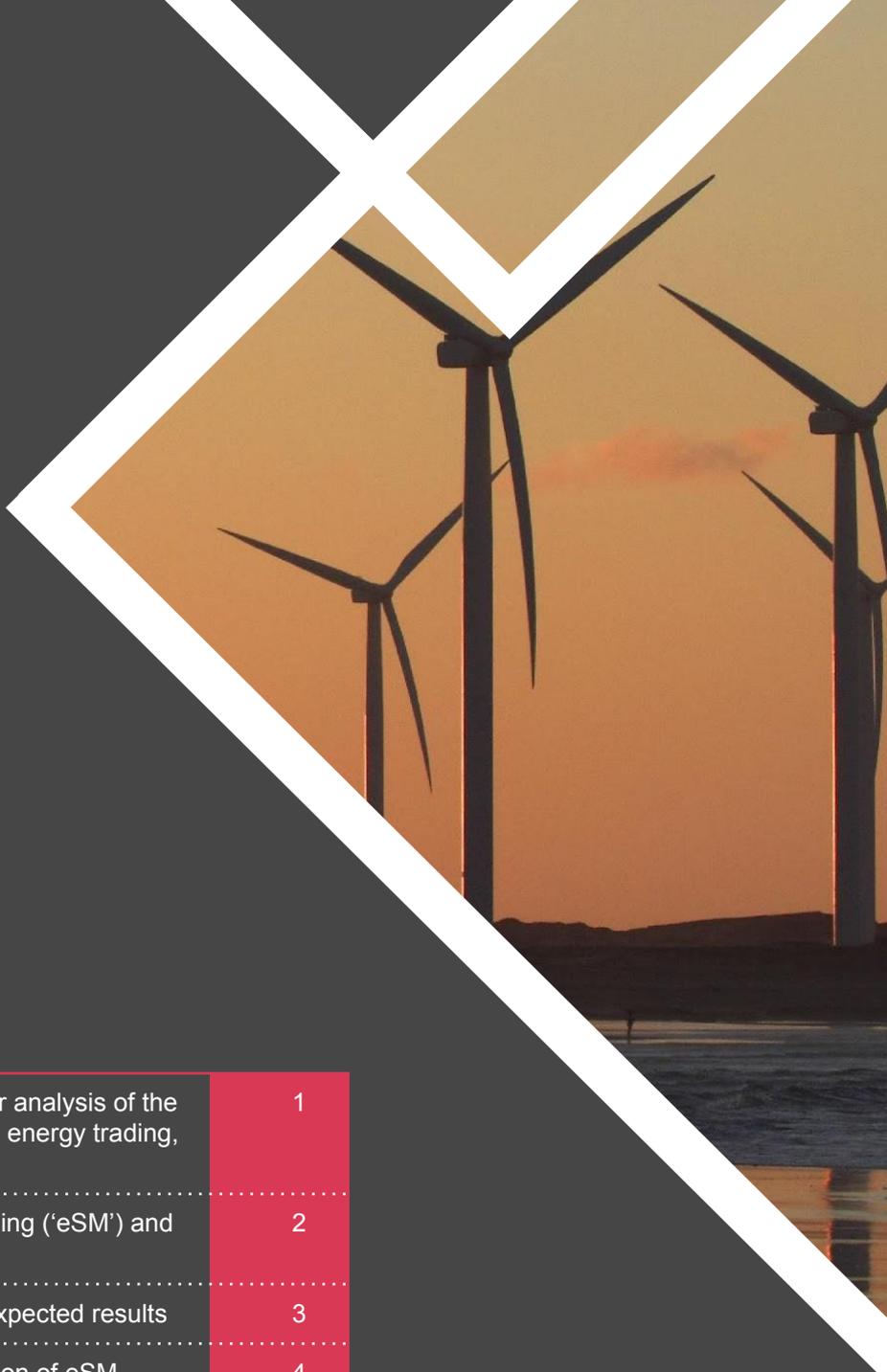


eSM - a step to enhancing market liquidity in OTC energy markets and reducing counterparty credit risk

Analysis of the potential impact of the European-wide adoption of Electronic Settlement Matching ('eSM') and accelerated settlement of OTC energy contracts

April 2022



A photograph of several wind turbines silhouetted against a warm, orange sunset sky. The turbines are positioned in a field, and the scene is framed by a large white geometric shape that points towards the left. The overall background of the page is dark grey.

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Energising settlements: the results of our analysis of the potential impact of eSM across Europe's energy trading, generation and supply businesses

In an effort to standardise the settlement matching process and improve the quality of settlement and invoicing data, the European Federation of Energy Traders ('EFET') published the electronic Settlement Matching ('eSM') standards in 2019. eSM has now been implemented by many European energy companies who are live, matching OTC settlements with their counterparties using third party software.

Whilst operational benefits such as opex savings, improved data quality and fewer counterparty disputes arising from data discrepancies can be achieved by implementing eSM, it is also, and perhaps more importantly, widely recognised as an enabler to accelerating settlement dates across the industry. In the current high-price trading environment (H2 2021 to the date of this report) and with further energy price increases expected across Europe, a move to daily settlement is particularly pertinent, providing companies with an opportunity to optimise their portfolio from a cost, profitability and a cash perspective, and helping to maintain market liquidity in OTC energy markets.

Current market practice is for invoices to be settled on the 20th day of the calendar month for European OTC gas and power trades, with any associated margin held returned the following working day. This approach has long been in place and has not kept pace with enhancements made across the industry to digitise and automate front and back office processes. Indeed, this timeframe to settle invoices exacerbates the financial pressure on energy companies, and in particular in the current high price environment, the high levels of counterparty credit limit utilisation are forcing trading activity away from OTC markets and onto exchanges.

To validate these assertions, PwC and EFET have collaborated to assess the potential benefits for European energy market participants collectively accelerating settlement dates towards daily invoice settlement.

The key findings were:

- Earlier settlement should help secure and enhance the liquidity of the OTC market as a whole by reducing the financial and operational risks to which it is exposed, including the risk of credit default.
- The impact was most significant in moving to daily (Delivery + 2) settlement. As expected, net sellers saw the most significant financial benefit, however all participants saw benefits.
- For both net sellers and net buyers, benefits of earlier settlement included:
 - A reduction in credit risk exposure due to earlier payment from counterparties
 - A cashflow benefit from earlier repayment of outstanding margin
 - Increased counterparty credit headroom achieved when trades are invoiced daily, facilitating increased trading activity.

- For net buyers, earlier settlement results in earlier net cash outflow driving working capital cost. However, participants in the study, including net buyers, highlighted that the high utilisation of OTC credit limits, particularly in the current high and volatile price environment, has caused them to increase their use of exchanges which typically require higher initial and variation margin costs than the costs of trading in OTC markets. A move towards daily settlement should increase available counterparty credit headroom which may both facilitate increased OTC market liquidity and help companies to continue to trade OTC rather than on exchange.

The European Federation of Energy Traders ('EFET') represents more than 100 energy trading companies, active in over 27 European countries. The association promotes and facilitates European energy trading in open, transparent and liquid wholesale markets, unhindered by national borders or other obstacles.

We would like to extend our thanks to each of the European companies who participated in this study.

Overview of electronic Settlement Matching ('eSM') and the technology that supports it



What is eSM and how does it work?

- There are many factors driving the industry to automate trade-related processes with the aim of achieving straight-through processing, including: reduced settlement risk; improved data quality and availability; greater staff efficiency; higher productivity and lower processing costs; and faster transaction processing times.
- Previously, EFET implemented standards to automate confirmation matching through electronic confirmation matching ('eCM'), and the regulatory reporting of transactions through electronic regulatory reporting ('eRR'), both of which have been widely adopted across the industry.
- More recently, eSM standards have been developed by EFET to facilitate electronic exchange of settlement information, providing the European energy trading industry with the defined message flow, content and structure needed to facilitate electronic matching of trade settlements and netting statements.
- Although not a prerequisite for all market participants, widespread adoption of eSM will also provide an opportunity for the industry to earlier settlement dates for OTC gas and power trades agreed under master agreements (e.g. Grid Trade Master Agreements (GTMA) and EFET Master Agreements).
- The EFET eSM working group, comprising a broad range of European energy trading and supply businesses, is supporting this initiative and the roll out of eSM across the industry.



What technology is needed for eSM?

- eSM requires automation of settlement processes, involving changes to internal systems and the use of third party technology to perform matching between counterparties.
- There are currently two technology providers offering eSM solutions – Equias and Fidectus.
- The cost of implementing eSM varies from company to company, depending on the nature of the trading arrangements, size and complexity of the settlement operations as a whole, as well as the existing technology infrastructure and the degree of straight-through processing already achieved. As an example from our discussions with companies in the study, implementation costs for a medium sized trader (processing 250-750 energy trading invoices per month) running an established ERP system were approximately €200-300k, and a move to daily settlement with enhanced automation and application integration requirements is expected to require similar further spend.



Scope and approach of the study, and expected results



We worked with a representative sample of European energy market participants to calculate the impact of earlier settlement dates

- 6 energy trading and supply businesses from across Europe participated in the study.
- They varied in terms of size, location, nature and extent of their trading/optimisation activities, and whether they were typically long or short in OTC markets.
- Following an initial pilot, each participant provided anonymised data about their aggregate net purchase/sales in OTC gas and power markets and the associated margin between 1 July 2020 and 30 June 2021. The data used in the analysis precedes the high price markets experienced from late 2021 through to the date of this report.
- Some assumptions were then made and applied to all data sets provided. We used an average of the cash flows within each month and applied a consistent finance cost and default rate in our calculations. The analysis does not calculate the impact in respect of any other credit support arrangements that may currently be in place (e.g. Parent Company Guarantees (PCGs) or Letters of Credit (LCs) etc.).
- In our analysis, we calculated the impact of moving settlement dates across three increments, from the current Month +20 days to Month +10 days, Month +5 days, and Delivery +2 days (Delivery +2 is the result of raising invoices the day after energy flow, with settlement occurring the following day).
- We quantified the impact of early settlement on working capital (including margin) and credit risk.



The expected impact of earlier settlement and the underlying complexities of our analysis

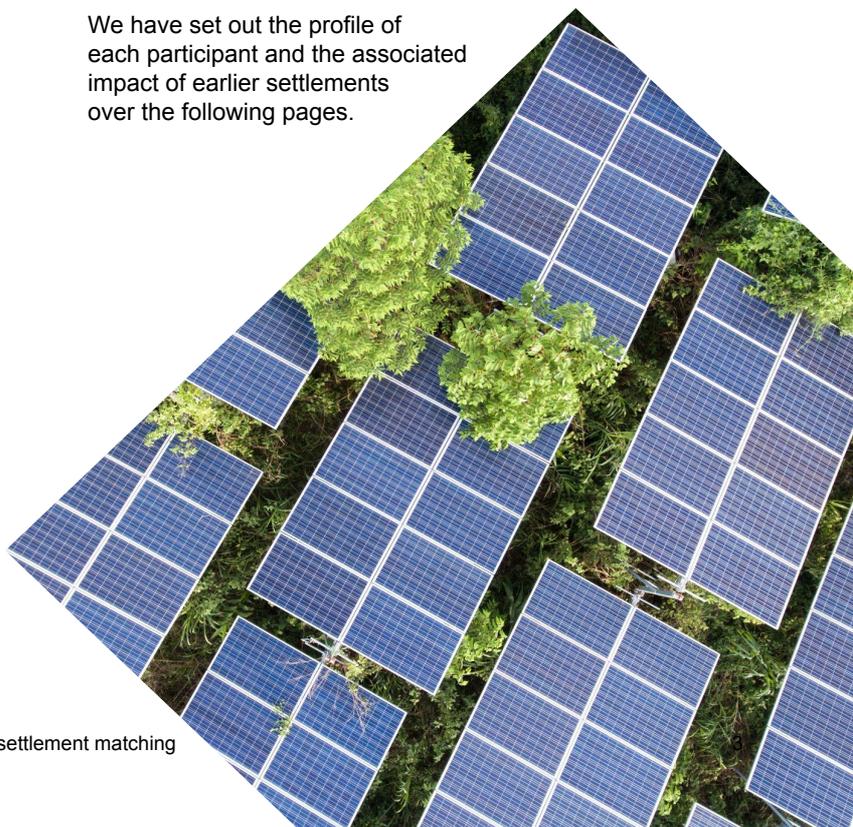
The table below shows the expected impact of earlier settlement on companies in a net sales position vs a net purchase position. As our analysis shows, the actual impact on each company was more complex and depended upon:

- The extent of margining and degree to which it is on purchases and/or sales
- The nature and size of the company's trading activities
- The monthly variability in being long/short in OTC markets

Underlying market conditions including market pricing and counterparty credit risk/ratings also affect the impact of earlier settlement.

Company trading profile	Working capital impact	Margin impact	Credit impact
Net seller	Working capital saving due to earlier receipt of payments	Earlier repayment of margin – impact expected to vary depending upon the extent to which margin is on purchases and/or sales	Credit saving as a result of reduced exposure to counterparty default risk
Net buyer	Working capital cost due to making earlier payments		

We have set out the profile of each participant and the associated impact of earlier settlements over the following pages.



Analysis of the potential impact of adoption of eSM across 6 European energy businesses

We have set out below an overview of the company profile and results for each participant

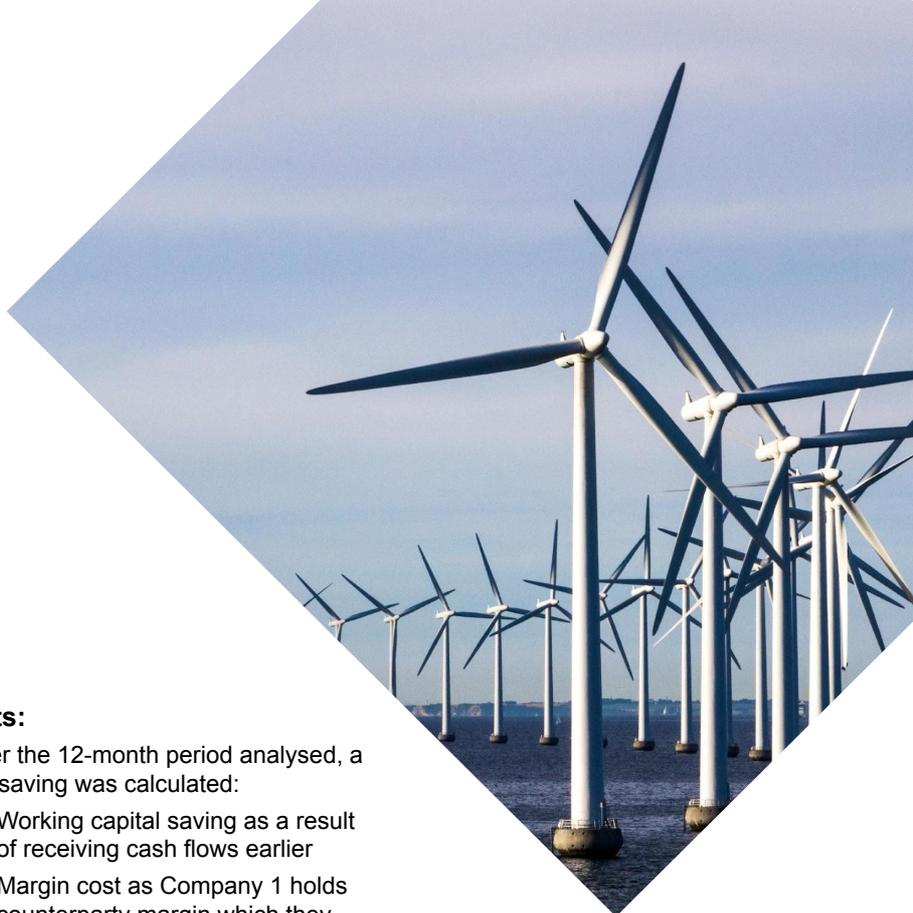
Company 1

Company profile:

- Large multinational energy utility company
- OTC trading activity includes optimisation of structured purchase contracts and own generation
- Over the 12 month period they were a consistent net seller in receipt of margin from counterparties
- Energy trading invoices processed per month: 750+
- Back Office Settlements FTE = >20

Results:

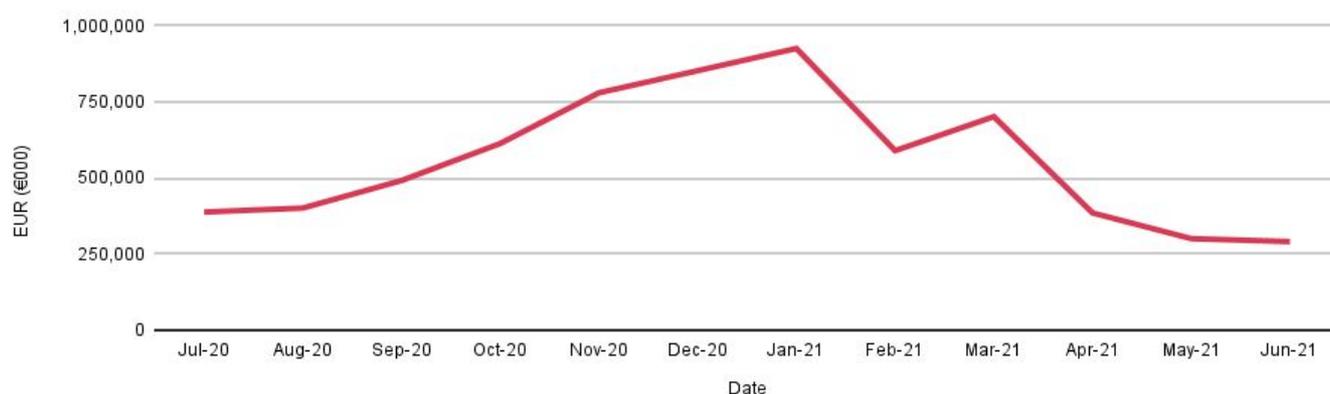
- Over the 12-month period analysed, a net saving was calculated:
 - Working capital saving as a result of receiving cash flows earlier
 - Margin cost as Company 1 holds counterparty margin which they would need to repay earlier
 - Credit benefit as a result of reduced exposure to counterparty default risk



Company 1's calculated cost/benefit over a 12-month period

Settlement date	Working capital benefit (€000)	Margin cost (€000)	Credit benefit (€000) ¹	Total net benefit (€000)
10 days after month end	3,700	(1,700)	800	2,800
5 days after month end	5,600	(2,600)	1,200	4,200
Daily, day +2	12,000	(5,500)	2,500	9,000

Company 1's net realised OTC position at settlement date



¹ Note that the credit benefit is calculated using an assumed default rate of 0.5%, whereas in reality any credit event will have a more binary impact. The analysis does not take into account the impact of other credit support arrangements such as Letters of Credit (LCs)/ Parent Company Guarantees (PCGs).

Analysis of the potential impact of adoption of eSM across 6 European energy businesses



We have set out below an overview of the company profile and results for each participant

Company 2

Company profile:

- Mid-sized energy utility
- OTC trading activity includes purchases for supply, optimisation of structured purchase contracts, sales from storage and of own generation
- Over the 12 month period they were a consistent net buyer
- None of the OTC positions were subject to margin agreements, hence there was no impact of early repayment of cash held/owed
- Energy trading invoices processed per month: 250-750
- Back Office Settlements FTE = 5-10

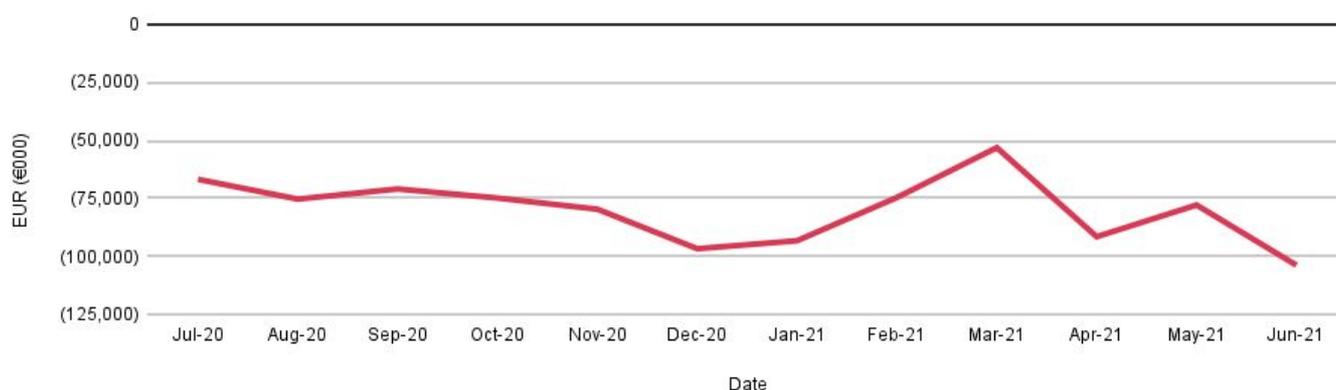
Results:

- Over the 12-month period analysed, a net cost was calculated:
 - Working capital cost as a result of paying cash flows earlier
 - A small offsetting credit benefit as a result of reduced exposure to counterparty default risk on receivables (even though a net payable overall).

Company 2's calculated cost/benefit over a 12-month period

Settlement date	Working capital benefit (€000)	Margin cost (€000)	Credit benefit (€000) ¹	Total net benefit (€000)
10 days after month end	(700)	0	100	(600)
5 days after month end	(1,100)	0	100	(1,000)
Daily, day +2	(2,400)	0	300	(2,100)

Company 2's net realised OTC position at settlement date



¹ Note that the credit benefit is calculated using an assumed default rate of 0.5%, whereas in reality any credit event will have a more binary impact. The analysis does not take into account the impact of other credit support arrangements such as Letters of Credit (LCs)/ Parent Company Guarantees (PCGs).

Analysis of the potential impact of adoption of eSM across 6 European energy businesses



We have set out below an overview of the company profile and results for each participant

Company 3

Company profile:

- Mid-sized energy producer and supplier
- OTC trading activity includes sales of own generation, trading and optimisation
- Over the 12 month period they were a consistent net seller
- Energy trading invoices processed per month: 250-750
- Back Office Settlements FTE = 10-20

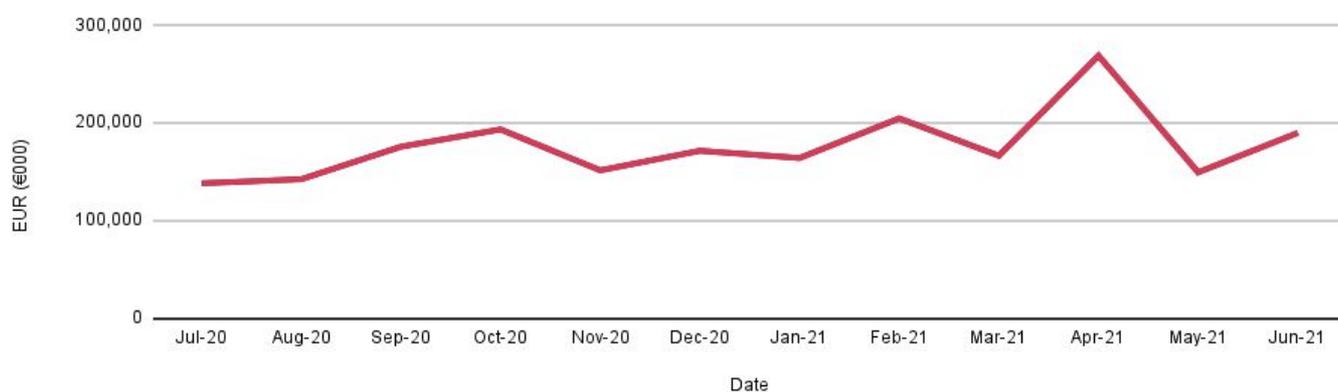
Results:

- Over the 12-month period analysed, a net saving was calculated:
 - Working capital saving as a result of receiving cash flows earlier
 - Margin cost as Company 3 is a holder of counterparty margin which they would need to repay earlier
 - Credit benefit as a result of reduced exposure to counterparty default risk

Company 3's calculated cost/benefit over a 12-month period

Settlement date	Working capital benefit (€000)	Margin cost (€000)	Credit benefit (€000) ¹	Total net benefit (€000)
10 days after month end	1,200	(100)	300	1,400
5 days after month end	1,700	(200)	400	1,900
Daily, day +2	3,800	(500)	900	4,200

Company 3's net realised OTC position at settlement date



¹ Note that the credit benefit is calculated using an assumed default rate of 0.5%, whereas in reality any credit event will have a more binary impact. The analysis does not take into account the impact of other credit support arrangements such as Letters of Credit (LCs)/ Parent Company Guarantees (PCGs).

Analysis of the potential impact of adoption of eSM across 6 European energy businesses

We have set out below an overview of the company profile and results for each participant

Company 4

Company profile:

- Municipality energy supply company
- OTC trading activity includes purchases for supply, and sales for margin management and optimisation
- Over the 12 month period they were a consistent net buyer
- None of the OTC positions were subject to margin agreements, hence there was no impact of early repayment of cash held/owed
- Energy trading invoices processed per month: <250
- Back Office Settlements FTE = <5

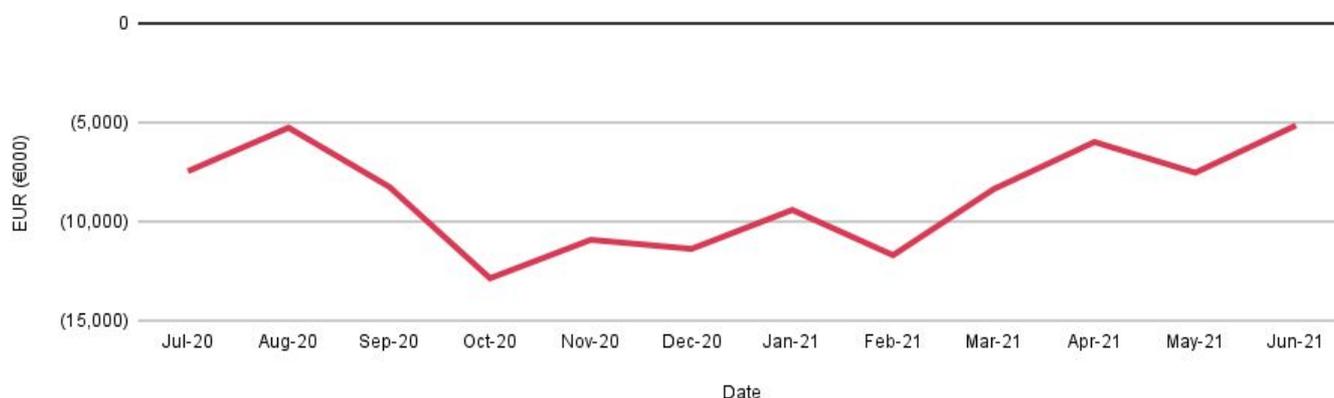
Results:

- Over the 12-month period analysed, a net cost was calculated:
 - Working capital cost as a result of paying cash flows earlier
 - Credit benefit as a result of reduced exposure to counterparty default risk on receivables (even though a net payable overall).

Company 4's calculated cost/benefit over a 12-month period

Settlement date	Working capital benefit (€000)	Margin cost (€000)	Credit benefit (€000) ¹	Total net benefit (€000)
10 days after month end	(60)	0	20	(40)
5 days after month end	(90)	0	30	(60)
Daily, day +2	(190)	0	70	(120)

Company 4's net realised OTC position at settlement date



¹ Note that the credit benefit is calculated using an assumed default rate of 0.5%, whereas in reality any credit event will have a more binary impact. The analysis does not take into account the impact of other credit support arrangements such as Letters of Credit (LCs)/ Parent Company Guarantees (PCGs).

Analysis of the potential impact of adoption of eSM across 6 European energy businesses



We have set out below an overview of the company profile and results for each participant

Company 5

Company profile:

- Mid-sized energy utility company/originator
- OTC trading activity includes sales of own generation, trading and optimisation
- Over the 12 month period they were a net seller, but with some months as a net buyer
- Energy trading invoices processed per month: 750+
- Back Office Settlements FTE = >20

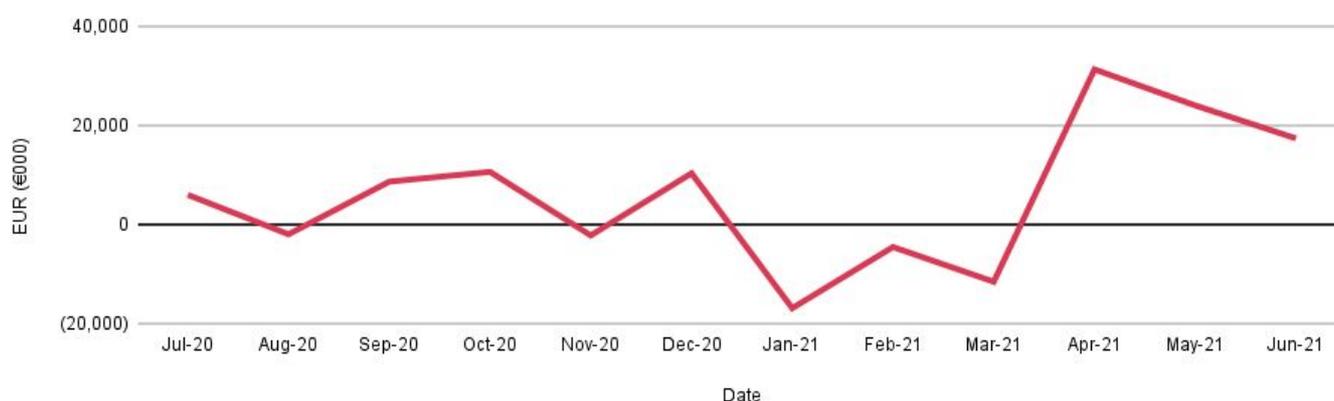
Results:

- Over the 12-month period analysed, a net saving was calculated:
 - Working capital saving as a result of receiving cash flows earlier
 - A cash benefit as margin would be repaid earlier by counterparties for which there is credit support
 - Credit benefit as a result of reduced exposure to counterparty default risk

Company 5's calculated cost/benefit over a 12-month period

Settlement date	Working capital benefit (€000)	Margin cost (€000)	Credit benefit (€000) ¹	Total net benefit (€000)
10 days after month end	40	190	210	440
5 days after month end	60	280	320	660
Daily, day +2	130	610	700	1,440

Company 5's net realised OTC position at settlement date



¹ Note that the credit benefit is calculated using an assumed default rate of 0.5%, whereas in reality any credit event will have a more binary impact. The analysis does not take into account the impact of other credit support arrangements such as Letters of Credit (LCs)/ Parent Company Guarantees (PCGs).

Analysis of the potential impact of adoption of eSM across 6 European energy businesses



We have set out below an overview of the company profile and results for each participant

Company 6

Company profile:

- Large multinational energy utility
- OTC trading activity includes purchases for supply, and sales for margin management and optimisation
- The company is in an overall net purchase position for OTC physical gas/power, however there were several months where they were a net seller.
- Energy trading invoices processed per month: 750+
- Back Office Settlements FTE = 5-10

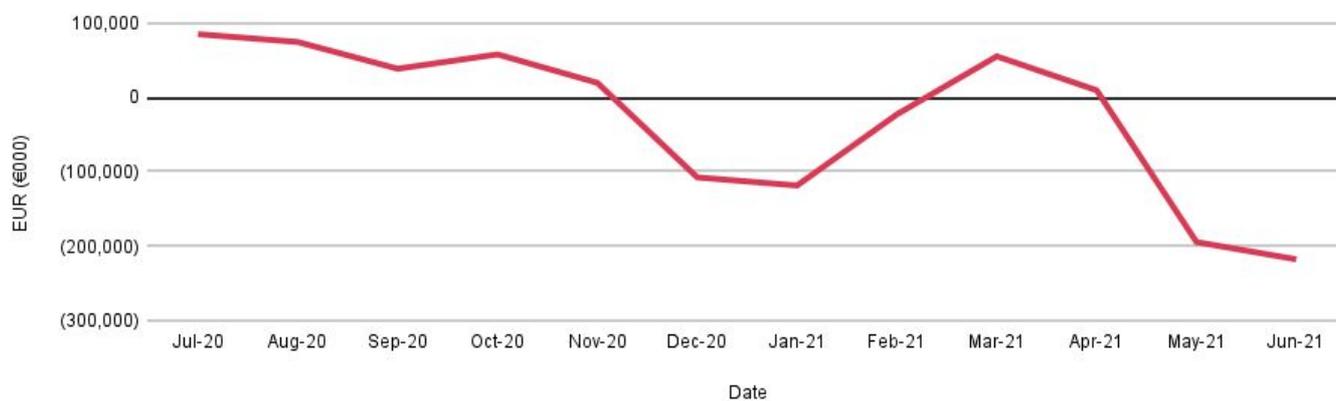
Results:

- Over the 12-month period analysed, a net saving was calculated:
 - A significant saving on the reduction in credit risk given their large gross receivables
 - Offsetting working capital cost from earlier settlement as the company is in a net purchase position (albeit the impact varies month by month inline with net sales purchases)
 - Further offsetting cost from margining due to earlier repayment of margin cash, as for most months the company is holding client cash margin

Company 6's calculated cost/benefit over a 12-month period

Settlement date	Working capital benefit (€000)	Margin cost (€000)	Credit benefit (€000) ¹	Total net benefit (€000)
10 days after month end	(200)	(300)	5,400	4,900
5 days after month end	(300)	(400)	8,100	7,400
Daily, day +2	(600)	(1,000)	17,700	16,100

Company 6's net realised OTC position at settlement date



¹ Note that the credit benefit is calculated using an assumed default rate of 0.5%, whereas in reality any credit event will have a more binary impact. The analysis does not take into account the impact of other credit support arrangements such as Letters of Credit (LCs)/ Parent Company Guarantees (PCGs).

Key findings from the results of our analysis

Key impacts of earlier settlement dates

- Daily settlement of European OTC power and gas trades brings benefits to both individual trading companies and to the market as a whole, especially in light of the current high price environment, providing an opportunity for companies to review and optimise their portfolio and continue trading in OTC markets.
- The impact of earlier settlement is driven by three factors: i) sales/purchase profile, ii) overall reduction in default risk and iii) early repayment of margin payments, where such arrangements are in place.
- For all companies, the impact of moving to earlier settlement is amplified as the settlement cycle is shortened, with the most significant being a move to daily (D+2) settlement.
- Whilst the data in the study covered the period of July 2020 - June 2021, in the current high-price trading environment (H2 2021 to the date of this report), companies in the study commented that they are paying close attention to their balance of OTC vs exchange trading activity. Increasingly, companies are fully utilising their counterparty OTC credit limits, leading to a greater use of exchanges as a result.
 - One participant commented that whilst historically they have traded OTC vs Exchange 70/30, more recently this has moved to 30/70 in favour of exchange trading.** This typically brings higher initial margin costs. Earlier settlement dates, particularly moving to daily settlement is expected to free-up counterparty credit headroom, thereby allowing for greater optimisation in OTC markets.
- With margin requirements increasing in the current market environment, even for OTC trades, **one participant commented that they are already bringing forward the settlement date (albeit still monthly billing so no extra trading activity) with some counterparties to allow return of margin/to free up credit limits with OTC counterparties.**
- As expected, the analysis shows working capital savings for net OTC sellers as a result of earlier payment of invoices by counterparties. By contrast, for net OTC buyers there is a working capital cost associated with earlier settlement. The OTC purchase/sales profiles varied month by month due to a number of factors including seasonality, and the balance between OTC and structured contracts/exchange traded contracts.

- Margin savings or costs are dependant on whether the company is in a net receivable or payable position with counterparties for which there is a margining agreement. This varied by company (companies 2 and 4 do not have any such arrangements in place), by month, and by the net sales/purchase position with counterparties with whom participants posted margin, which could be very different from their overall net sales/purchase position. Overall net-buyers with counterparties for which there is a margin agreement see a cash flow benefit to earlier settlement dates, as margin is required to be repaid earlier. The opposite is true for a net sellers.
- Reduction in the exposure to counterparty credit risk benefits all study participants. Whilst we used a 0.5% default rate in our analysis, in reality counterparty default will be a binary event. In the current volatile and high price environment, we have seen an increase in counterparty default risk.

Other impacts of earlier settlement dates

We also note a number of other potential benefits for all market participants that can be realised through daily settlement:

- Further savings on credit facilities as organisations may be able to reduce their maximum (undrawn) borrowing facilities. This is particularly the case where organisations have increased their use of exchanges, requiring significant borrowing facility headroom to cover margin calls.
 - One participant commented that the total external financing needed to cover the initial margin and variation margin requirements of their exchange-cleared business had increased by 300% in the past 12-18 months – something which was of particular concern for the long term.**
- Operational cost savings/efficiencies can be realised through process automation and the associated reduction in error rates and administration time. This may also free up Back Office staff.
- In realising a smaller default risk, companies may further benefit from reduced letter of credit fees.
- Companies will no longer be exposed to increased credit risk overnight each month when invoices have been paid but delivery margin has not yet been returned by the counterparty.

Daily settlement will however likely incur additional bank charges due to the fees payable for the increased number of transactions.

Recommendations for EFET, market participants, and the industry in driving eSM adoption and realising the benefits of earlier settlement dates



Key challenges of moving to earlier settlement dates

- Implementation of eSM and the realisation of benefits is easier for those already operating straight through processing (STP) for settlement, accounting and processing of payments.
- The move to earlier settlement dates requires adoption across the industry between both larger and smaller players to ensure smaller participants are not left behind.
- Accelerating settlement dates to D+2 will require companies to have effective and efficient invoicing, payment and accounting processes in place, achieved through enhanced automation and/or straight-through processing. Achieving this level of automation requires the investment of time, resource and budget.
- As well as changes to master agreements, amendments will potentially be required to a number of contractual terms (for example monthly indexed price contracts), to specify how daily pricing would be determined (for example using provisional pricing).



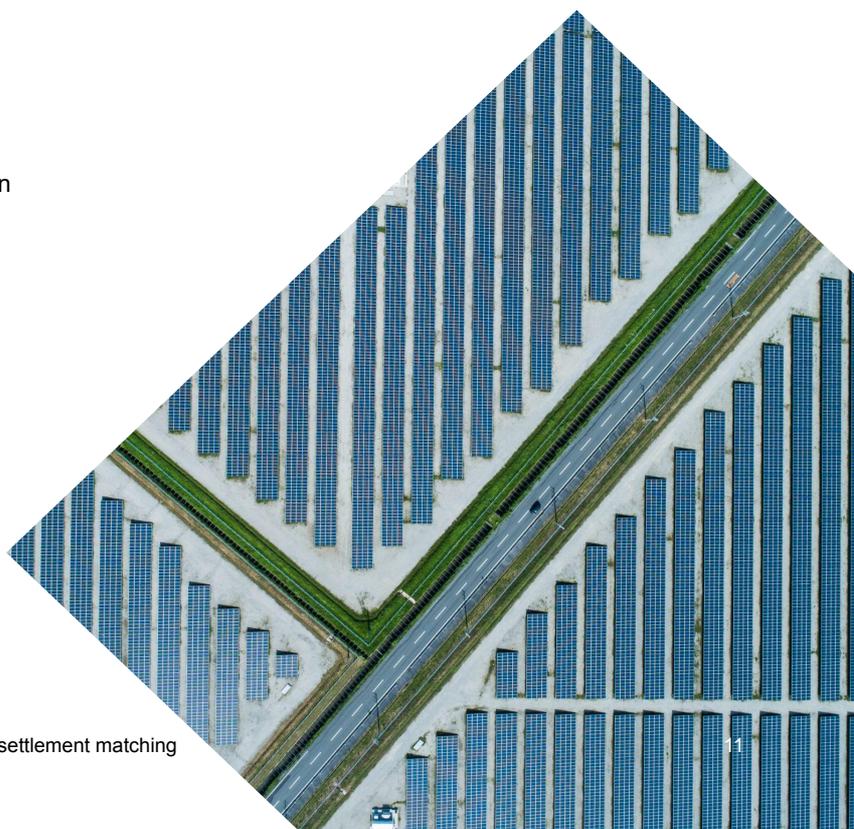
What should market participants be doing?

- Working together with EFET to agree whether earlier settlement dates to D+2 should occur incrementally or in a 'big bang', and on what timeline, so that benefits can be realised across the industry.
- Speaking with your counterparties and service providers to agree to move to eSM.
- Preparing your internal systems, processes and people for eSM and earlier settlement dates.
- Participating in EFET's eSM working groups and forums so that you can stay informed of progress, participate in discussions and influence decisions.



What should EFET be doing?

- Communicating the potential benefits of eSM adoption and earlier settlement dates to the industry as a whole (traders and regulators).
- Helping coordinate the industry to develop their transition plans for the adoption of eSM and the move to earlier settlement dates.
- Extending the scope of eSM standards to mirror recent updates to the scope of eCM standards.



A photograph of wind turbines at sunset, with a large white geometric shape overlaid on the right side of the image. The sky is a mix of orange, yellow, and blue, and the turbines are silhouetted against it.

Get in touch

Mark Copley

CEO, European Federation of Energy Traders ('EFET')

m.copley@efet.org

Barbara Lempp

Managing Director, EFET Deutschland

b.lempp@efet.org

David Coulon

Partner, Commodity Trading

david.coulon@pwc.com

Jonathan Rose

Director, Commodity Trading

jonathan.a.rose@pwc.com

Amy Thompson

Senior Manager, Commodity Trading

thompson.amy@pwc.com

We would also like to thank Gavin Ferguson, advisor to EFET for his contribution to this project.

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RITM7697923