



EFET Position Paper: Transparency and Availability of Information in Continental European Wholesale Electricity Markets July 2003

1. Introduction

The liberalisation of European power markets has focused on the creation of competition in electricity generation and in retailing electricity to final electricity consumers. Consumers can choose their retailer and those retailers can source their requirements in increasingly competitive wholesale electricity markets. While transmission and distribution networks remain monopolised, regulated access requirements increasingly ensure that eligible customers, retailers, wholesale marketers and power generators can access the networks on fair, transparent, non-discriminatory terms.

As electricity market liberalisation has introduced competition into the generation and retailing of power, the wholesale trading of power has become increasingly competitive. Wholesale traders are playing an ever expanding role in managing the wholesale market risks stemming from competition between vertically integrated players, independent generators and new entrant retailers to produce, buy and sell their power requirements. As we outline in section 2 below, an efficient wholesale market for power is crucial to meeting the aims of liberalisation and offers the prospect of considerable benefits to consumers.

The development of an efficient wholesale market, however, is currently being hindered by the lack of information being released to the market. Poor access to information raises a huge barrier to the entry of new market participants and is stifling the development of efficient, transparent wholesale markets. In section 3 below, we therefore outline the urgent need for regulators to push for greater information release in European electricity markets.

Despite this need for greater transparency, we are aware that some market participants have concerns about information release and we address these concerns in section 4. Finally, in section 5 we describe those specific items of information that we would like to see released across all countries in the EU.

2. Efficient Wholesale Markets Bring Extensive Benefits to Consumers

Liberalisation has effectively created a new wholesale marketing or “trading” function in electricity markets. The wholesale marketer performs the following basic functions:

- Aggregating a portfolio of generation purchases from a variety of independent sources (including imports) for delivery at some future time; and then
- Disaggregating or “repackaging” that portfolio in onward sales to retailers and to those customers sourcing their own requirements.

This wholesale “intermediation” function is not unique to electricity; wholesalers in any industry aggregate purchases from producers before repackaging the product for onward sale to larger consumers and retailers, thereby allowing market participants to buy and sell according to their preferred profiles and thereby manage their price and volume risks. In electricity, the wholesale trading function was previously internalised in large vertically integrated companies who owned most of the generation resources and had exclusive rights to serve customers. As liberalisation has introduced competition into the generation and retailing of power, new entrant and incumbent market participants now compete to provide wholesale risk management services. Wholesale traders are playing an ever expanding role in managing the market risks stemming from competition between vertically integrated players, independent generators and new entrant retailers to produce, buy and sell their power requirements. For example, wholesale traders can help market participants to manage the following risks:

- Wholesale electricity market prices tend to be highly volatile and peak prices can often be several times the average price of power. The trader will offer prices fixed for future periods allowing generators and retailers to lock in their margins in advance of delivery.
- A trader may buy the output from a generator on a “non-firm” basis and thereby take the risk that the generator is not available. By buying from several generators, the trader can sell retailers “firm” (ie, fixed volume) power for future periods.
- Retailers can buy and sell from traders to adjust their purchases to match the acquisition or loss of new customer accounts and to meet variations in the expected consumption of their customers.
- Generators can “buy in” power from traders to meet fixed-volume sales contracts when their plants are out for maintenance or if their generators have an unexpected outage.

Unlike many other industries, power is a perfectly fungible commodity, one MWh is identical to the next MWh,¹ which allows wholesale electricity to be traded as a standard product in liquid forward and spot markets. As competition increases, a range of standard forward products delineated by time period and geography become actively traded. For example, in the UK, power is openly bought and sold in the following markets:

- individual half-hours;
- six daily blocks of eight half-hour periods;
- individual days;
- blocks of weekdays and weekends
- individual months;
- seasons; and
- annual contracts for several years into the future.

This is a typical breakdown of products in a liberalised and competitive power market. Contracts are traded bilaterally, over-the-counter via brokers and on screen-based markets and on power exchanges with the result that the prices for buying and selling these products are readily observable to market participants. This allows all market participants – including traders - to make informed decisions on when and how to source their requirements. Vertically integrated players, independent generators, independent retailers and wholesale

¹ Strictly, electricity is only perfectly fungible *at a particular location* at any point in time. Locational differences in value are a function of the commercial arrangements surrounding transmission and distribution, including the methods adopted for managing congestion on transmission networks. These transmission considerations are largely outside the scope of this paper, but do not alter the arguments presented here.

traders compete to buy and sell in these markets. As competition grows between these players, these forward markets become increasingly liquid, such that the market participants can buy or sell significant volumes without a material impact on market prices. In turn, the spread between buy and sell prices (ie, the “premium” paid by market participants for managing their wholesale market risks) narrows. This results in huge efficiency savings along the value chain for the production and sale of electricity. These efficiency savings can be broadly broken down as follows:

- **Efficient operation and maintenance.** Generation is sourced at least cost. With a readily observable price for each time period, generators can choose either to generate themselves or to buy-in their contracted deliveries from the market (effectively from other, cheaper generators). Over longer-time periods, forward market prices provide signals on the most advantageous time to take a generator off for maintenance (ie, when prices are low). Similarly, large consumers with tariffs linked to wholesale prices may choose not to consume at particular times of the day or year to avoid relatively high prices. The overall result is an economically efficient pattern of generation and consumption.
- **Efficient risk management.** Forward markets allow market participants to buy and sell electricity over many different periods and to fine-tune their portfolios as their expected requirements change. Traders facilitate this process by adding liquidity and reducing the costs of buying and selling power (indeed traders can only profit if they can manage these risks more cheaply than physical market participants). Liquid forward markets allow market participants to reduce their volume and price risks which in turn leads to stable cash-flows and reduced financing costs.
- **Effective competition in generation and retail.** The presence of a liquid wholesale market significantly reduces the barriers to entry for independent generation and retailers. Even small generators and retailers will have access to efficient markets for risk-management services without the need to build a substantial portfolio of assets or customers to manage those risks internally. This will promote competition in retail and generation and deliver further benefits to customers.
- **Efficient investment and improved security of supply.** Liquid wholesale markets provide signals several years into the future on the level and pattern of prices. This provides efficient signals on when to invest in new generation to meet demand. New investments will take place when forward prices rise to account for increased tightness between demand and available capacity. This ensures that adequate generating capacity is constructed. Moreover, in shorter timescales, the ability of market prices to rise to reflect shortages can provide efficient signals to bring on additional generation, accelerate maintenance, defer consumption etc. The transparency of the market price signals therefore provides a direct, financial incentive to underwrite security of supply.
- **Efficient use and expansion of transmission infrastructure.** Transparent, liquid regional wholesale markets provide effective price signals of the value of electricity within each region. As a consequence, clear signals are also provided of the value of interconnections between these regional wholesale markets. When market participants can freely access the capacity at the interconnections,² power is efficiently transferred between regions and congestion on those interconnections is managed optimally. In turn, this provides efficient longer-term signals on the value of expanding transmission capacity to facilitate more flows between regions. This can provide an invaluable guide to transmission companies and regulators in prioritising transmission capacity expansions, which in turn further strengthens security of supply.

² Free access to interconnections can be provided by either explicitly allocating the interconnection capacity at borders (eg, by auctions) or by implicit allocations resulting from “market splitting”. EFET’s views on the allocation of cross-border capacity are dealt with in a separate position paper on the topic.

Competitive wholesale markets therefore bring significant efficiency savings to consumers. The development of liquid, transparent forward markets is crucial to the realisation of these benefits.

3. Efficient Markets Require Greater Information Transparency for All Market Participants

The previous section has demonstrated that the development of efficient, liquid wholesale markets in the EU will bring huge benefits to consumers in terms of enhanced security of supply and lower prices. To realise these benefits, however, all wholesale market participants – traders, generators and retailers - need to be able to compete in the wholesale markets on a fair basis and with transparent information about the underlying drivers of market supply and demand. To compete effectively in wholesale electricity markets, traders have to be able to predict the likely evolution of supply and demand in the market and the ability to move electricity around the transmission system. This enables traders to take a forward view of the likely evolution of market prices and therefore to make informed purchase and sale decisions in the forward markets. At a broad level, therefore, an efficient wholesale market requires the release of *ex ante* forecast information on:

- Demand levels by region and time period;
- Available transmission capacity between regions (including likely expansions in capacity);
- Available generation capacities.

Understanding past events and their resulting impact on prices is also an indispensable element of forming a forward view on market developments. In addition to receiving important data in advance, traders therefore also need to understand *actual* events through analysis of detailed information after the event. At a broad level, this requires the release of detailed *ex post* information on:

- Actual demand by region;
- Actual flows between regions; and
- Actual production

At present, the level of information release in European electricity markets is at best patchy. Some markets – notably the UK and Nordic markets – are incredibly transparent and release hundreds of thousands of data items every day.³ Many other markets remain frustratingly opaque. The lack of effective information release in EU electricity markets is currently stifling the development of wholesale market competition. Without good data on likely events and the ability to explain the underlying causes for past events, market participants cannot gain a detailed understanding of the underlying supply and demand fundamentals and hence likely developments in the market. This lack of information requires market participants to risk their capital on events that they do not fully understand, which increases risk premia and reduces market liquidity. This is inefficient and ultimately imposes significant costs on electricity consumers. (This can be a particular concern in highly concentrated markets, where market participants face the increased risk that their counterparties have the ability to control, as well as superior knowledge of, future market developments.)

Without greater information release, the limited and imperilled liquidity in European wholesale power markets of the last fifteen months will not improve. The empirical evidence

³ However, even in the UK in those areas where transparency is lacking, such as the procurement of reserve capacity by the TSO, concerns have arisen over the impact of the TSO's actions on the wholesale market price.

shows that, after a positive start in 2000 and 2001, the trading environment worsened in 2002, with traded volumes falling by up to 50 per cent in some countries following the exit of many market participants. There is therefore an urgent need to attract new market participants into European electricity markets to arrest this decline and to re-establish liquidity levels. Greater information release would play a key role in attracting new entrant traders back to European energy markets.

In section 5 below, we expand on the broad information headings above and develop some specific proposals on individual data items that should be released in each market. Before discussing the specific data items that EFET would like to be released, however, we want to address some concerns that have often been expressed about information release. In particular, in section 4 we address the concerns that information release may promote collusion and that it may compromise market participants' commercial confidentiality.

4. Addressing Concerns about Information Release by Generation Companies

The above arguments have demonstrated that the release of market information has a crucial role to play in promoting efficient wholesale markets and in levelling the playing field between incumbents and new entrants. In developing policies for the release of information, regulators need to account for several practical constraints on the precise form and timing of the information released to ensure that information release does not inadvertently undermine competition and does not impose undue burdens on market participants. In particular, several arguments are often made against the release of further market information and we wanted to consider those arguments in this paper. In particular, it is often claimed that greater information release will promote collusion and compromise market participant's commercial confidentiality thereby undermining competition. It has also been claimed that the release of further information in one country would somehow be "unfair" if similar information is not simultaneously provided in neighbouring jurisdictions. We discuss these areas in more detail in the following sub-sections.

4.1 Information Release and Collusion

Opponents of information release have argued that the provision of ex ante generation information will facilitate collusion between dominant market participants. This argument has some theoretical merit in that the ability to signal production decisions to competitors is undoubtedly one way of sustaining implicit collusion in a market. However, the following factors are likely to constrain any collusion in practice:

- Implicit (and explicit) collusion is prohibited by EU and national competition laws and participants engaging in anti-competitive conduct face significant fines.
- Financial services regulation is increasingly being applied to power markets. This places onerous restrictions on participants manipulating market prices and engaging in transactions without a bona fide commercial purpose.
- Implicit collusion can typically only be maintained with a small number of participants in a concentrated market (typically four or less) before the incentives to "cheat" on the collusive agreement override the incentive to collude. Implicit collusion therefore tends to be unstable, particularly in the presence of growing competition and new entry.

Even if potential collusion remains a concern for regulators, there are also strong grounds to suggest that this should not prevent the release of further market information. In particular:

- With information release, collusive behaviour is readily identified and analysed by regulators and market participants.⁴ Collusion left behind closed doors or in a “grey” market of private bilateral deals between incumbents would be significantly more difficult to detect. Indeed, a lack of transparency can itself be a breeding ground for collusive behaviour.
- Transparency on any collusive behaviour allows traders to factor that behaviour into their decisions and “trade around it”. (Indeed, despite a highly concentrated generation sector in the UK, active trading was possible under the Pool arrangements precisely because of the wealth of information released.)
- Preventing information release on the grounds that it aids the exercise of market power does nothing to address that underlying market power nor offers the prospect of moving to a more competitive future. If market power is a problem, regulators should take direct steps to reduce market concentration and to improve new entry, rather than to restrict information flows (and thereby protect the status quo).

There are therefore strong arguments against regulators restricting information release on the grounds that it may facilitate collusion.

4.2 Commercial Confidentiality and Information Release

Section 3 above explained the importance of releasing generation information with a material impact on market prices as a crucial factor in levelling the playing field between wholesale market participants. However, in competitive markets, it is also clearly important to protect the commercial confidentiality of market participants and, as a general rule, market participants should be free to arrange their individual production and purchasing decisions without having to reveal their individual strategies or commercially confidential data to the market. In developing a strategy for information release, regulators therefore need to strike a balance between protecting the commercial position of individual market participants and the benefits of information release to the wider market.

The need to protect commercial confidentiality suggests that plant or company specific outage plans should not be released to the market in advance and that generators are entitled to retain the commercial value of this information. One particular concern is that the release of *ex ante* generation information would unfairly compromise a market participant's ability to buy in the market following an outage before the outage information is released so that they are not disadvantaged by higher market prices or “squeezed” by other market participants. (These concerns relate solely to the release of *ex ante* data on generator outages. The release of actual generation data on an *ex post* basis cannot be price sensitive and hence should not be considered commercially confidential).

The commercial needs of individual generators need, however, to be balanced against the informational requirements of the wider market. In particular, every purchase made by a generator to cover a short position resulting from a planned outage is matched by a corresponding sale from another market participant. If only the generator knows that prices are likely to rise once the wider market becomes aware of an outage, the seller faces an asymmetric risk to the buyer, which will reduce market liquidity, increase buy-sell spreads and increase the costs of trading in the market to the ultimate detriment of consumers.

In a liquid, competitive market, a single outage by a single market participant is unlikely to have a major impact on price and the possibility of a participant being “squeezed” becomes

⁴ For example, in the UK, Enron commissioned an independent study from the Brattle Group to analyse and quantify the cost of generator market power and the results of this analysis contributed to regulatory moves to secure generator divestment.

increasingly remote with multiple buyers and sellers in the market. Moreover, in many electricity markets short-term trading takes place on exchanges where the identity of the buyer and seller is anonymous, thereby removing any direct link between an outage event and the corresponding purchases and sales. Moreover, the release of data on outages and planned maintenance does not necessarily reveal a market participant's trading position. A generator may have bought additional power in advance of notifying an outage (e.g. during low priced periods), bought options to acquire or sell power or sold more power in advance than they plan to generate on average. In a liquid competitive market, therefore, the commercial detriment from requiring generators to release ex ante generation information to the wider market is likely to be small.

However, in illiquid markets, revelation of outage information could potentially damage the commercial position of some market participants. For example, a single-plant generator is less likely to have a portfolio of assets and contractual purchases (including options) to cover potential outages, making it more likely that a requirement to reveal outage information may reveal their commercial position to the market. (By contrast, larger players may be able to draw on several options within their contractual and physical portfolios to manage their overall positions.) In illiquid markets, generators may also have to buy in power – or resort to balancing arrangements - at prices controlled by their competitors and will face high premiums in buying options to cover potential outages. (This lack of liquidity and absence of trading options can be a particular problem in short-term markets or those with significant generation concentration.) A requirement to publish plant specific information in illiquid markets could therefore potentially undermine generation competition and wholesale market competition more widely.

In developing regulatory policy toward information release, a balance must therefore be struck between protecting the commercial confidentiality of individual market participants and the benefits of releasing information to the wider market. Financial regulators have addressed this balance with clear definitions of inside information, clear rules for information release and restrictions on insider dealing. Financial regulators have deemed these rules necessary to protect the integrity of the markets and individual investors. As financial services regulation extends to commodities (via the revised Investment Services Directive and the Market Abuse Directive), we would therefore expect an increased regulatory focus on the definition and use of inside information in commodity markets.

One pragmatic option is for energy regulators to require the release of aggregated information (e.g. the TSO could release ex ante information on generation availability which has been aggregated by region or by fuel type). The aggregation of data allows market participants to retain crucial advance information on the likely supply curve for generation while protecting company-specific data. The precise level of aggregation required will depend on the specific characteristics of the market concerned and the state of competition in that market.

Conclusions on Release and Confidentiality of Generation Company Information

As noted above, the detriment to an individual generator's commercial confidentiality is likely to be lower in liquid, competitive markets. At the same time, though, markets with highly concentrated generation sectors are unlikely to become more competitive without greater information release. (It is not a coincidence that the most competitive and liquid markets in Europe - England and Wales and Nordpool - also began life with significant levels of information release.) In highly concentrated markets, therefore, while aggregation of ex ante generation information may be insufficient to protect individual players' commercial interests (i.e. because they have such a high percentage of the generation capacity), regulators may nevertheless decide that the release of information is essential to allow further competition to develop and to mitigate the effects of that market power.

In weighing these arguments, we note that liquidity and competition in many European electricity markets is currently far from established and that many markets remain highly concentrated. Moreover, appropriate aggregation of data will be sufficient to protect generation companies' commercial confidentiality in all but the most concentrated markets. It may be in such countries that regulatory intervention could do most to stimulate liquidity and competition, through the release of more information).

EFET recognises that realistically the release of transmission system and demand side data should be priorities for TSOs and regulators. It is also clear that extensive consultation on appropriate mechanisms and protections, related to any further disclosure of ex ante information by generators, would be required. We nonetheless urge all European regulators and the new EU cross border electricity regulatory committee to tackle the subject. We believe the release of ex ante generation information, aggregated by wholesale "hub" and by appropriate fuel classification will prove the right way forward in each geographical electricity market.

4.3 Pan-European Publication of Data

EFET is aware of concerns that publication of data in one country could unjustifiably disadvantage market participants and customers in that country, if similar data release requirements are not imposed in neighbouring member states. While EFET believes that more data should be released on a similar basis across the European electricity market, this should not delay information release in any single country pending a pan-European agreement. Greater information release in any one country will improve competition, improve liquidity and benefit consumers in that country *regardless* of whether similar information is released in neighbouring countries. To adopt an "all-or-nothing" approach would require all markets move at the pace of the slowest, delaying the benefits of greater competition to European electricity consumers. While a prompt pan-European approach would be our preference, this should not be used to block national initiatives to promote information release nor "roll-back" the levels of information release in the more open, competitive markets.

5. Recommended Approach to Information Release by Category of Information

EFET believes that the European Commission and CEER should now be formulating mandatory guidelines for Member States to impose obligations on Transmission System Operators (TSOs) and generators to provide adequate information to the wider market. These guidelines should oblige TSOs to provide information on cross-border transfer capacity, generation capacity and aggregate availability and demand data to all users of high voltage transmission grids.

The Commission and CEER should specify the information that Member States should require network operators to divulge and should work to establish common definitions and approaches to information release. A starting point would be the information that the Commission has identified be published by the TSOs as part of the Florence process. In due course, the regulatory committee established under the new EU cross border power trade regulation would also determine the information to be released of relevance to export and import transactions.

The following sections expand on the specific items of information that EFET would like to see released and the specific justification for that release. The required information detailed in these sections represents a pragmatic compromise between the overriding need to release as much information as possible to the market and the pragmatic considerations discussed in section 4 above. The list of required information also recognises that it would be neither practical nor efficient to release all possible information to the market. (For example, in the case of small generating stations or some customer loads, detailed information may not be readily available due to the absence of sufficiently accurate metering.) Generally, the information required is therefore only that which is likely to have a material impact on market prices.

5.1 Cross border transmission capacity

Greater information availability on the physical network would help liquidity to develop. The provision of this information to the market, would improve co-ordination between TSOs and aid congestion management. It is important that information regarding actual real time cross border flows between TSOs on adjacent borders and any borders where loop flows occur is freely available to the market. IFIEC, in its paper of the 14th October 2002, "A Dynamic Toolbox Approach to Cross Border Capacity Allocation and Congestion Management", states that one of the critical factors for the successful management of cross-border capacities includes transparency of real-time information concerning cross-border capacity availability. The paper also asserts that one of the problems with implementing market-based methods for congestion management is lack of liquid markets, the dominant positions of certain generators and unbundled TSOs.

EFET would therefore like to see transmission information made publicly available across Europe in the following form:

- Net Transfer Capacity (NTC) and Actual Transfer Capacity (ATC). NTC and ATC should be defined and agreed. A reasonable starting point would be to use the ETSO standard⁵ but previous EFET comments regarding the standard should be noted. In particular, clear rules for calculating NTC and ATC need to be established and netting of predictable flows implemented. (This would *inter alia* eliminate current anomalies where the calculated capacity can be different on each side of a single border, or where seasonal weekly and diurnal variations in availability are ignored.)
- TSOs should implement NTC and ATC definitions in the management of flows, publication of data and co-ordination of cross-border flows.
- TSOs should publish the thermal rating of the interconnectors between regions and the methodology for calculating the safety margin.
- Using the agreed definitions of ATC and NTC, TSOs should publish aggregate contracted cross-border capacity bookings ex-ante up to a year forward.
- Aggregate levels of nominated hourly import and export per unique border should be published on a day-ahead basis, with corrections for intra-day usage published at D+1.
- In publishing availability of cross-border capacity, TSOs should specify the capacity already reserved for long-term contracts and how long these contracts are in existence for.
- For long term cross border contracts, with daily options embedded within them, the aggregated maximum value that can be requested under them should be published in the annual forecast.

⁵ Reference document: ETSO Definitions of Transfer Capacities in liberalized Electricity Markets, Final Report, April 2001

- TSOs should publish ex-post levels of hourly aggregate physical cross-border flows per unique border between neighbouring TSOs as soon as practicable but by D+1 at the latest.

5.2 Aggregate demand levels

Demand forecasts are invaluable to market participants in taking a view on the likely balance between supply and demand and give market participants the confidence to transact in short-term markets, allowing them to readjust positions close to real time. In turn, increased trading in short-term markets provides signals along the forward curve and stimulates levels of liquidity in the forward markets. For example, RTE load curves in France offer good levels of information for a useful tenor; this has attracted new entrants and has increased trading.

There may be practical constraints on the publication of demand data. In particular, procuring demand data at the distribution level in several countries is problematic. It is also important that the definitions and calculations underlying any demand information are made clear (particularly how embedded generation and losses are being treated in the calculations). Information on aggregate demand levels across TSOs is already calculated in a number of countries and systems to disseminate it throughout the market could be implemented relatively quickly. It should be the responsibility of the TSOs or designated market operators to provide this information under supervision from the relevant regulatory or competition authorities. The specific data required is as follows:

- Forecast demand on a hub by hub basis as frequently as the forecasts are produced by the TSO, but at the very least at D-1 for the following day
- Ex-post or real time levels of demand on a hub by hub basis,
- Information to be released as soon as practicable but D+1 latest,
- Historical data should be provided as far back as possible but at least 3 years,

5.3 Balancing Services and Reserve

Information on ancillary services provided to TSOs and how balancing charges are derived will help participants understand why a TSO takes a particular action. Where imbalance charges are levied through fixed tariffs a clear description of how the tariff is set will allow market participants to judge how reflective they are of the costs of system balancing. Parties should be better able to understand how balancing services are procured and how a TSO's actions will affect the costs of balancing the network. EFET therefore regards the following three elements of disclosure with regard to balancing and reserve:

- Transparent calculation and publication of balancing costs. Where a balancing market exists the calculation of balancing prices should be explicit. In the absence of a balancing market, the level of the imbalance tariff and clear definitions of the applied rules for their derivation should be published. The income from these tariffs should be auditable by the regulator or competition authority to ensure cost reflectivity.
- Transparent calculation and weekly publication of reserve margins and required reserve margin. A clear definition of how these figures are derived needs to be published by the TSOs.
- Details of constraint points on the transmission⁶ network inside borders as soon as they have been identified and the reasons for the constraint.

5.4 Ex Post Generation Data

⁶ As defined in the EU Electricity Directive, Article 2, Definition 3

As discussed in section 3 above, the ability to analyse past events and their resulting impact on prices is an indispensable element in the development of forward market liquidity. EFET would therefore like to see ex post generation information made publicly available across Europe in the following form:

1. Aggregate ex post reservoir levels on a hub-by-hub basis should be published weekly.
2. Actual generation statistics on a plant-by-plant basis should be made available as soon as practicable, but at day plus one (D+1) at the latest.

5.5 Ex Ante Generation Information

As discussed in section 4.2 above, there are some concerns about the disclosure of some ex ante generation information. In practice, much of this information is already compiled in many markets, although it is not always released. For example:

- In the UK, the National Grid Company publishes information on planned generator availability aggregated by region.
- In France, maintenance schedules for nuclear plants are planned 3 years forward, but this information is currently only made available to the authorities.
- In Germany Platt's obtains and publishes information on nuclear plant maintenance schedules on an irregular basis but there is nothing statutory to make this information available nor to confirm its accuracy.
- Swiss reservoir levels are published providing the market with important information on the likely availability of hydro-electricity.

Nonetheless we recognize the sensitivities involved on the part of companies with large generation portfolios in any particular geographical market. The level of priority of disclosure of this type of information and the necessary consultation processes are discussed in the concluding paragraphs of section 4.2 above.

Subject to prioritisation of other types of data release and to consultation, EFET calls for the disclosure of aggregated ex ante information by generators (most likely through TSOs, aggregated by wholesale "hub" and by appropriate fuel classification, with supervision of disclosure by regulatory authorities) on the following basis:

1. Aggregate generation maintenance and availability schedules would be published:
 - Per TSO control area or, if smaller, per commodity price zone;
 - Specifying any new build, mothballing and closures;
 - One year forward with quarterly updates;
 - For all generation units greater than 50MW capacity;
 - By fuel type (nuclear, fossil, water, wind etc.); and
 - According to the UCTE definition of availability (or some other clear, broadly accepted definition of availability).
2. On a maximum week-ahead basis the updated one year forward schedules would be converted into capacity availability forecasts for the following week, at the same level of aggregation as in 1. above