

## Dual Purpose Transmission Rights

### *The pros and cons of physical and financial transmission capacity rights and a recommended EFET approach for a pan European model*

#### DISCUSSION PAPER

November 2008

#### ***Executive Summary***

EFET has explained in detail in several past papers the importance of a market for fully firm and tradable capacity rights<sup>1</sup>. The benefits are many, and include for example:

- **Enabling competition across borders:** True cross border competition will only result if market participants can buy transmission capacity rights that allow them to deliver power across borders for a fixed price over a longer term than is possible than at present.
- **Delivering welfare gains for European consumers through more efficient markets:** An efficiency and a price convergence will result for European consumers if transmission rights are fully firm and are sold by TSOs, as natural sellers and the only ones able to manage the risks.
- **Providing the right price signals and aiding liquidity:** Transmission capacity rights that are fungible in a secondary, traded market will provide clear price signals. This will aid liquidity both in the energy and transmission capacity rights markets, as markets will be more readily and transparently coupled with each other.
- **Enabling proper incentives based regulation of TSOs:** Facing the full price signals of curtailment of cross border capacity, as established in a liquid market, will enable the TSOs to take more efficient decisions when deciding how to manage the network. Having such price signals will also enable regulators to put in place proper incentives based regulation of TSOs and improve market efficiency.

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<sup>1</sup> A practical step towards an internal electricity market: EFET proposal for a market in cross-border electricity transmission capacity rights, *September 2007*; Key principles in the treatment of electricity transmission capacity rights and their linkage to day ahead allocation mechanisms, *June 2007*; Intra-day power markets within and across European national frontiers: A practical approach to facilitate wholesale liquidity, *December 2006*; all papers are available on [www.efet.org](http://www.efet.org)

But in this debate, EFET perceives that there has been significant confusion about what the nature of such transmission capacity rights would look like – should they be Financial Transmission Rights (FTRs), Physical Transmission Rights (PTRs) or Contracts For Differences (CFDs) for example?

To move the thinking forward, EFET proposes that all these three types of capacity rights may not necessarily be appropriate in isolation. Instead, a pragmatic solution is required that fits capacity trading in the European Markets through a standardised contract across Europe.

This paper explains how a basic concept of TSOs selling **Dual Purpose Transmission Rights (DPTRs)** could be easily and rapidly implemented to fit in with most European markets and, with some minor adjustments, also to those without an energy exchange. The solution EFET envisages, as applied in central Western Europe, briefly works as follows:

- TSOs sell a Dual Purpose Transmission Right forward using the same terms structure for trading Energy in the markets (so calendar years a few years forward) as described in previous EFET position papers<sup>2</sup>. In some cases, whilst building new lines (merchant or other), investors may also face a requirement to sell part of that transmission DPTR for even longer time frames to reduce price exposure to short and medium market spreads and to ensure projects are acceptable for financing purposes.
- The Dual Purpose Transmission Right is an option on the spread between two markets and is (if no action is taken) a financial right automatically cashed out at day-ahead stage on the power exchanges, through a market coupling algorithm or at the explicit D-1 auction clearing price. The capacity right is an option until T-30 minutes, after which it turns into an obligation.
- If the owner wishes and market arrangements allow, the Dual Purpose Transmission Right can also be used physically by notifying the relevant organisation(s). Once a market participant has selected to use the Dual Purpose Transmission Right physically, it represents an obligation to schedule the power between two markets according to normal timeframes and rules put in place by the TSOs as at present.

The key benefits of this approach are:

- **Ease of use:** Automatic use for market coupling, or cash out against exchanges favours market entry by non physical market participants. When exchanges do not exist in both price areas, capacity holders could be automatically paid out the value of the explicit D-1 auction if not stating they wished to use it physically. This would naturally be subject to designing a significantly more streamlined process for conducting explicit day ahead auctions;
- **Providing a hedge:** The ability to choose whether the Dual Purpose Transmission Right is used financially or physically enables easy hedging between markets, regardless of whether the underlying trades stem from the OTC or Exchange market.
- **Maintaining competition between exchanges and brokers.** Being a hedge in OTC, exchange traded or market coupled regions means that trading can take place in whichever way the market perceives it gets the best service. This eliminates the need to regulate exchanges as a new set of monopolised institutions if market coupling were to be mandated.

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<sup>2</sup> See the EFET Position Paper “Key principles in the treatment of electricity transmission capacity rights and their linkage to day ahead allocation mechanisms”, June '07, for details

- **Future proofing the market:** This solution allows for dynamic efficiency, in that it does not prescribe the way trading should occur. This recognises that while many (although by no means all) argue market coupling is a good solution now, it may not be thought to be in perpetuity. The flexibility about how market participants' trade will be a very important way to ensure that the market can adapt as technology, methods or other changes takes place as the market develops.

EFET welcomes debate on these issues and would like to discuss with regulators how to implement this concept as a matter of priority.

## **1. Review of the benefits of firm, tradable capacity rights to aid competition in the European Energy Market**

It is essential for market participants to be able to buy transmission capacity rights that allow them to deliver power across borders for a fixed price.

Transmission capacity products should be sold as **Dual Purpose Transmission Rights (DPTRs)** with a variety of maturities, in line with common term-sales arrangements. This should include selling DPTRs forward using the same term structure as for trading Energy in the markets (so calendar years a few years forward) as described in previous EFET position papers. It is also possible that DPTRs are sold for even longer time frames to reduce price exposure to short and medium market spreads and to ensure projects are acceptable for financing purposes (so perhaps for up to 20 years or longer, depending on the project).

As set out in more detail in previous EFET position papers<sup>3</sup>, transmission rights must be firm and initially sold by TSOs, since they are *natural sellers* of firm primary transmission capacity rights. TSOs have the ability to manage the risks involved, enjoy a variety of operational and physical means to adjust those risks, and indeed are the *only* players in the electricity sector that can do both for primary transmission rights. On the other hand TSOs need to be rewarded by regulators for taking the related risks, including the risk of price spikes occurring day ahead, when a potential exchange of physical for financial takes place, or when the cash-out in coupled markets occurs. EFET advocates regulatory incentive schemes for this purpose, using cash reserves available from accumulated cross border auction income.

A secondary traded market is needed. TSOs can then be active in this market to buy back any proportion in unexpected operational circumstances.

## **2. Pros and cons of transmission risk related instruments**

### **Physical Transmission Rights (PTRs)**

PTRs are optional rights to nominate power flows from country A to country B, which can be used for flowing power either on OTC markets, through Power Exchanges or any combination of the two. Therefore, PTR holders are fully hedged against price fluctuations on each side. However, they have to bear flow risk so long as TSOs limit full financial firmness. PTRs may be acquired in Auctions or in a secondary market.

#### *Pros*

- Fully and easily hedged
- Choice about whether or not trading takes place on exchange or OTC

#### *Cons*

- Obligation of market participant to schedule the power – entailing operational risk
- Market participant retention of the flow risk – exposure to curtailment
- Lack of availability of a truly firm product at present (i.e. TSOs do not offer market spread compensation)

### **Financial Transmission Rights (FTRs)**

A Financial Transmission Right (FTR) is a financial instrument that entitles the holder to receive compensation for Day-ahead Market price differences. They do not represent a right for physical delivery of power. As such FTRs may be acquired in FTR Auctions or in a secondary market.

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<sup>3</sup> See footnote 1

## Definition - FTR Options

*The hourly economic value of an FTR Option is based on the FTR MW reservation and the difference between Day-ahead Market prices designated in the FTR when that difference is positive. If TSOs were to sell FTRs these would by necessity need to be firm, as otherwise no meaningful way would exist to link these to the prevailing exchange or market prices.*

A price area A-to-price area B Financial Transmission Right is an **optional** product explicitly auctioned by TSOs at a purchase date (year-ahead stage, month-ahead stage) entitling its holder to collect a revenue equal to the spot price area spread (spot price B – spot price A, when positive) at its maturity date.

*In practice, calculating the value at which the FTR is settled is done by comparing two indexes, one in each market. Most of the time, however, this would be done via PX indexes (one point in time).*

### Pros

- Firmness is guaranteed day ahead by the nature of the contract
- Simpler settlement in cash only – less operational risk without nomination and scheduling
- Possible (although not simply and with high transaction costs and operational risk) to fully hedge the FTRs in OTC market at a day ahead stage.

### Cons

- Mandates use of exchanges in D-1 for cross border trade.
- Hard to define a robust index to settle the contract against if there are no exchanges.
- Potentially high fees, if exchanges adopt a similar fee structure as for trading the commodity.
- If used in exclusivity, precluding the use of an alternative physical trade of power through the OTC markets. This would in effect mandate a solution now that physical trade between markets may only take place through exchanges, which in the future might preclude other innovative ways to trade too.

## Contracts for Differences (CFDs)

Contracts for Differences (CFDs) are contracts that pay out the difference in energy price between a price area and the system regional price (case in Nordic and Italian markets). They work very much in a similar way to FTRs, in that they can be settled against exchange prices or used in a market coupling mechanism. However, CFDs are very different instruments that do in fact not bear any link to the underlying physical transmission of capacity, because the physical path from one price area to another is not referred in the CFD. The CFD is, as stated at the outset, the difference between a price area and a "virtual" system price. We have included them here for completeness of our analysis, but do not consider them to be appropriate tools for the European markets in their present form.

We believe CFDs are inappropriate instruments for managing cross border market exposure, primarily because TSOs do not issue these products to start off with. Generators that sell at the system price have a long position in CfDs and customers and retailers that buy at the system price have short positions in CfDs. It is unlikely many market participants themselves will be willing to take on a price-spread risk between two markets as a hedging service to third parties, because, in the absence of their ownership of a production source in one price area and a demand sink in another, most will not find a regular natural ability to manage such a risk.

Even trading companies that might in principle be willing to take such risks would likely only occasionally and to a limited extent be able to offer market spread hedges off the back of other transactions. Hence the limited use in Nord Pool of contracts for differences.

#### *Pros*

- If sufficient liquidity exists, may give market participants a chance to hedge the “local” price in markets with a virtual system price (as currently existing in the Nordic and Italian regions)
- Addition of a financial speculative market for parties brave enough (especially if they have no link to any physically matching source and sink in different prices areas within the system) to back the hedge

#### *Cons*

- Very difficult to perfectly hedge with the OTC market, because the CFD is not between price areas. Thus it does not reflect any transmission path
- CFDs cannot effectively be implemented in markets where there are no exchanges
- No potential to be adapted to a true transmission risk hedging instrument in future

### ***3. Dual Purpose Transmission Rights (DPTRs): A suggested pragmatic way forward***

Instead of choosing between PTRs, FTRs or CFDs, a new concept could be easily and rapidly implemented to fit in with most European markets and, with some minor adjustments, also to those without an energy exchange.

The solution EFET envisages – **Dual Purpose Transmission Rights (DPTRs)** – would briefly work as follows, as applied in central Western Europe:

- TSOs sell a DPTR forward in the same way that Energy is traded in the markets (so a few calendar years out, or even longer) as described in previous EFET position papers mentioned above.
- The DPTR is an option on the spread between two markets and is (if no action is taken) a financial right automatically cashed out at day-ahead stage on the power exchanges or through a market coupling algorithm.
- If the owner wishes and market arrangements allow, the DPTR can also be used physically by notifying the relevant organisation(s). Once a market participant has selected to use the DPTR physically, it represents an obligation to schedule the power between two markets according to normal timeframes and rules.

The benefits of this approach are many, and below we mention a few:

- **Ease of use:** Automatic use for market coupling, or cash out against exchanges favours market entry by non physical market participants;
- **Providing a hedge:** The ability to choose whether the DPTR is used financially or physically enables easy hedging between markets, regardless of whether the underlying trades stem from the OTC or Exchange traded markets.
- **Maintaining competition between exchanges and brokers.** Introduction of an instrument capable of comprising a hedge in OTC, exchange traded or market coupled regions means that trading can take place in whichever way market participants perceive they get the best service. It eliminates the potential need to

regulate exchanges as a new set of monopoly institutions (a necessary consequence if implicit auctions were ever to be mandated for all day ahead transactions.)

- **Future proofing the market:** This solution allows for dynamic efficiency, in that it does not prescribe the way trading should occur.

In simple terms, the approach we put forward here is one which is flexible in terms of how trade takes place, and as such neutral depending on the type of trader and the way in which trade takes place. It also means that, because of its flexibility, it is and can be easily adaptable to all European methods and markets that exist at present.

We have in this main section of the paper assumed the arrangements of Central Western European markets are in place, but also include in Annex 1 and 2 the special cases of how this method can be adopted in the Nordic as well as the Central and Eastern European markets.

EFET welcomes debate on these issues and will arrange to discuss with regulators how to implement this concept as a matter of priority.

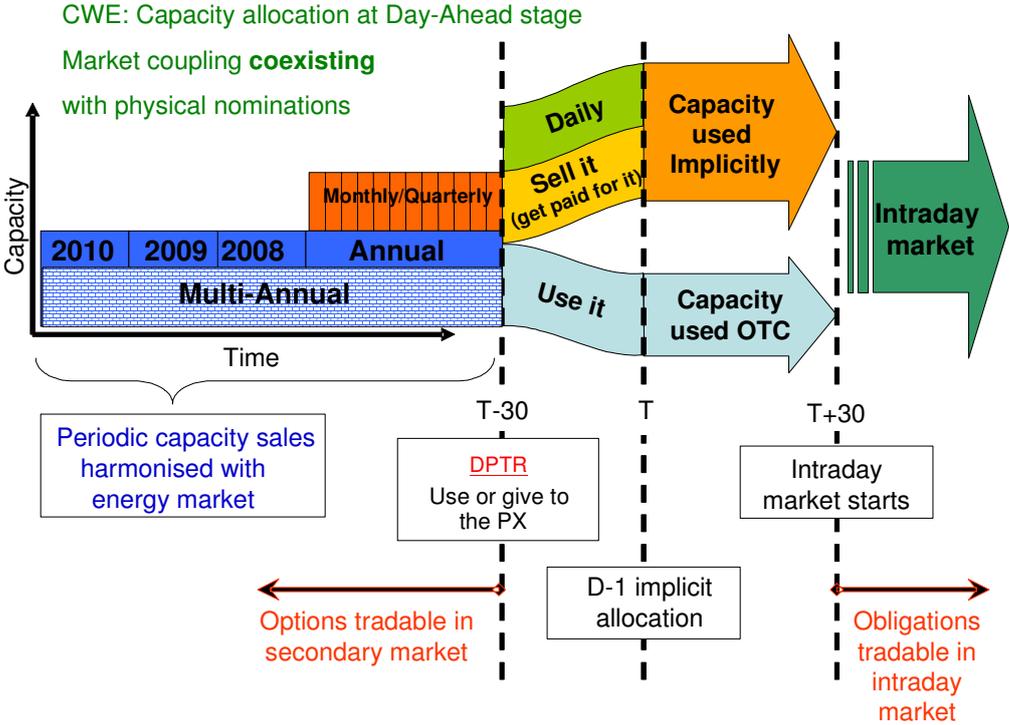
#### **4. Secondary trading of transmission capacity rights**

All transmission rights issued with maturities longer than one day ahead, as long as they are physical, should be subject to automatic UIOGPFI (use-it-or-get-paid-for-it), *yielding a pay-out for the long-term rights not nominated by the owner of the right equivalent to the price differential (if positive) in the energy markets on either side of the border.* All unused capacity in each time horizon would be compensated as described above as a result of the TSO offering that capacity in the implicit or explicit auction, which would include all reverted capacity and any other un-allocated available primary capacity.

The usage decision for borders implicitly allocated in the day-ahead market should be made as close as possible to the exchange bidding closure – we suggest 30 minutes. A gap of minimum duration prior to T would require a centralised nomination office across implicitly linked territories, or at least very close, electronically integrated coordination between linked TSOs. The imperative anyway is a very fast matching process and making sure capacity is available in time for the daily implicit allocation (i.e. the sum of daily unallocated capacity and the reverted portion), as well as published as a sure figure in due time before bidding starts.

Intra-day trading could start right after the day-ahead hourly market has cleared irrespective of the actual nomination time of schedules to the TSOs.

The time sequence of longer maturity and day-ahead capacity allocations can be described graphically as follows:



**Note:** The illustration refers to implementation where market coupling takes place. Where no exchanges exist, T would represent the time at which the explicit capacity auctions take place.

This diagram is intended to illustrate the allocation mechanism in the Central Western Europe where, at day-ahead stage, market players holding transmission rights acquired with longer maturities can either resell those for the market coupling and cash out the market spread value if any, or convert those rights into physical nominations.

In the event that market coupling algorithms fail to couple, we would envisage that the DPTRs could be treated in a similar way to the energy traded on those markets. For example, the fall back could be that instead of the market coupling spread, the owner choosing financial settlement could be compensated using the explicit auction prices.

We shall add at the end of 2008 or in early 2009 annexes to this paper describing how the DPTTR concept would work in the specific cases of the Nordic and Central Eastern European regions.

**5. Secondary trading of transmission capacity rights**

A key component to ensuring the full allocation and accurate valuation of cross border transmission capacity rights is a robust platform for secondary market trading of those rights. A secondary market trading platform would work with the primary market mechanism to facilitate the optimal utilisation of both physical and financial transmission rights.

TSOs should offer to the primary market, in advance, 100% of the physically available capacity over various multi year, monthly and daily time horizons.<sup>4</sup> Physical capacity that is not actually sold in the forward time horizons should be made available in the intraday market such that all available physical capacity is eventually offered to the market as a primary capacity product.

A secondary market trading platform would work with a UIOGPFI mechanism as described above to protect against capacity hoarding. With a secondary trading platform, instead of allowing their transmission rights to revert to the TSO or AO and being paid the energy market price differential, capacity holders can offer those capacity rights to the market and allow the market to value that right. The secondary market would help ensure that all physical rights are made available to the market for each time horizon, and that these rights are appropriately valued. Purchasers of transmission rights in the secondary market would themselves be subject to the UIOGPFI principles described above.

Evolution of more liquid and flexible secondary markets would involve three key components:

1. TSOs providing a “pre-registration” process where parties which might purchase secondary market capacity can register and provide any necessary credit assurances;
2. TSOs developing a transmission rights registry to ensure that no more capacity will be nominated than actually has been auctioned and to ascertain from which party TSOs might expect to receive day-ahead schedules. This kind of “registry function” is still necessary if TSOs auction comparable financial transmission rights, because they and power exchanges need to know who owns the right, so they can pay the appropriate market participant the value of the eventual spread; and
3. The TSO or a power exchange or brokers setting up web based mechanisms or platforms, where holders of primary or secondary capacity can post bids and offers for transmission capacity rights and then transact in them.

Implementing the first two should be a priority, and EFET believes that the establishment of the third should be up to the market through a competitive process.

The process for informing TSOs about DPTR assignments needs to be established, but in principle the TSO or AO will only need to know who will finally be nominating the flows at the time of the day-ahead gate closure for any physical nominations. EFET considers that notifications should therefore be permitted right up to the closing time for nominating power at the border. Hence, it must be permissible to trade capacity first, and inform the TSO or AO of the assignment afterwards.

## ***6. Conclusion and further work***

EFET recommends that fully firm Dual Purpose Transmission Rights – DPTRs – are sold by TSOs across Europe, on the basis that these can either be used physically or financially as set out in detail in this paper.

DPTRs will allow flexibility for trading on different platforms and in different ways, as well as future proofing the way in which capacity across borders trades to allow for any future changes in technologies or approaches.

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<sup>4</sup> The further question arises as to what mix of multi-annual and annual, compared with monthly or quarterly, transmission capacity should be auctioned.

The approach proposed will also allow for fully open platforms to develop around how capacity rights are traded thereby retaining healthy competition between exchanges, brokers and pure OTC transactions, as well as any future developments that may arise as technology or trading preferences and methods develop. The approach is not dissimilar to how MiFID has now allowed for competition in trading of shares (where the traditional exchanges previously enjoyed a monopoly status).

EFET believes that this will bring benefits to the market, services provided to market participants as well as consumers through realisation of welfare gains and efficiency improvements.

The concepts proposed in this paper can be rolled out simultaneously throughout Europe now. The model fits with every variety of trading models that exist in Europe today – from the Nordpool model in Scandinavia to the coordinated auction proposals proposed in the Central and South Eastern Europe to the bilateral physical trade of capacity rights taking place in Central Western Europe.

Surprisingly few changes are required to implement the EFET vision of a tradable market in capacity rights. Some include:

- TSOs and regulators agreeing to a common and harmonised way to offer fully, financially firm contracts for capacity rights, ensuring market based compensation for any unavoidable short run curtailment, including standard, objective and narrow definitions in auction rules of “emergency situation” and “*force majeure*”.
- Development of a pan European contract for trading in capacity rights. EFET has initiated this process already within a Legal Committee task force, and can offer on request a draft contract annex and accompanying interpretation notes, for examination in connection with this discussion paper.
- The exchanges establishing a service that enables cash out of DPTR contracts on the exchanges. This will likely require small rule changes and designing a process for cashing out or, if the user selects, using the DPTRs physically in the OTC markets.
- Brokers and exchanges starting to offer facilities to their clients/ members (and all market participants) to trade DPTRs. (EFET believes this will take place automatically once the contracts and processes have been established and firmness improves.)

Ideally, although not necessarily, ensuring that the trading in DPTRs becomes a liquid part of the market, it would be desirable to get a common European wide approach implemented in the following areas:

- TSOs entering the secondary market as occasional re-purchasers as an alternative to short run curtailment, to long run NTC reductions or to other occasional measures to guarantee cross border capacity availability (e.g. re-dispatch, counter-trade)
- TSOs and regulators agreeing to the sale of transmission capacity rights for periods beyond one year, and as advocated in previous EFET position papers, for the same maturities as those in which energy is commonly traded forward in the wholesale power market. Indeed, partial sales of transmission capacity rights for even longer time frames than the terms of the traded liquid markets should arguably also be considered, as this may be a good way to achieve bankable new investment in interconnections, without project sponsors needing to argue for exceptional TPA derogations.

EFET welcomes a debate about the ideas discussed in this paper at the forthcoming 2008 Florence Forum. We will be happy later, on request, to organise a workshop for regulators, TSOs and the European Commission, with the aim to agree on a way forward for implementing standardised dual purpose rights.