Draft ANNEXES to the CEER Blueprint on Incremental Capacity

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Abstract

This document (C13-GIF-06-03a) is a draft Annex to the CEER Blueprint on Incremental Capacity (C13-GIF-06-03) and presents worked examples on the integration of incremental capacity allocation into the long-term capacity allocation algorithm as per NC CAM (Annex 4); on the three variations of open season procedures: ex-post allocation in CAM NC algorithm, full demand curve approach and pro-rata (Annex 5); and on open season with pro-rate across two interconnection points (Annex 6).

The draft worked examples are of illustrative character to support the CEER Blueprint and the ACER public consultation on tariffs for incremental capacity and do not represent an agreed CEER position.

Annex 4 – Worked examples of integration of incremental capacity allocation into the LT capacity algorithm as per NC CAM

The purpose of this annex is to provide worked examples of how incremental capacity could be integrated into the CAM NC algorithm for LT existing capacity and to compare the proposed approaches: a single bidding ladder and a parallel bidding ladder.

1. Scenario and assumptions:

In our scenario, 150 units of existing bundled capacity are on offer at an IP in a CAM NC annual long term allocation of yearly products. The TSO has also published the following offer of incremental capacity (in addition to the existing 150):

- High case: 100 units
- Low case: 50 units

This incremental capacity is first offered for year 5, as the investment project has a lead time of 4 years (as an example).

The deemed investment costs (DIC) in total for both sides of the border are:

- 13,000€ for the high case.
- 3,500€ for the low case

The value of cumulative shipper commitments required to underpin the investment at both sides of the IP is published in advance as an economic test input: The fraction of deemed investment costs to be underwritten by shippers' commitments for the economic test to be passed is f = 0.5. The discount rate is 6%. The reserve price (P0) corresponds to the sum of the reserve prices of the capacities in the bundled product and in this scenario, P0 is 10€.

Bidding is for volumes of discrete yearly capacity products against price steps above the reserve price. Each price step opens as a bidding window starting with P0 (reserve price) and then increasing price step by price step. Volume bids placed in a given bidding window (price step) must be equal to or less than in the previous bidding window (next lower price step). The allocation procedure for a yearly product closes when the capacity demand is equal to or below the supply (offered capacity). After the closing of a bidding ladder, no further bidding window opens for that yearly product.

2. Auction of existing capacity, using the ascending clock algorithm

Let's first recap how the result of an auction of existing capacity could look like according to the ascending clock algorithm codified in the CAM NC.

The following table illustrates a possible aggregated bidding outcome for the existing capacity:

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
plus 3 price steps 13€ (P3)															
plus 2 price steps 12€ (P2)					**150**	**150**	**130**								
plus 1 price step 11€ (P1)	**150**	**150**	**150**	**150**	200	200	200	**90**	**90**	**90**	**90**	**90**	**90**	**90**	**60**
reserve price 10€ (P0)	200	200	200	200	250	250	250	250	250	250	250	250	250	250	190
Available existing capacity	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*

In this example, the allocation of existing capacity closes at the price steps where the bold underlined volumes are demanded. These can be volumes equal to the offer of existing capacity (all capacity sold), or below – in this case an under-sell could occur (e.g. in year 15 the under-sell is 150 – 60 = 90 units).[1]

In this example, a volume exceeding the offer of existing capacity is demanded for a sustained number of years (at lower price steps than the price steps where the allocation cleared for the existing capacity). This reveals a level of demand which may justify an efficient investment. This advocates for testing an investment in incremental capacity.

3. Single bidding ladder approach

The TSO indicates 100 incremental units are available in years 5 to 15, in addition to the existing 150 units available in each year.[2] The same bidding results are used as above to test this high case; shippers cannot adapt their bidding. This yields the following clearing prices and volumes in the single bidding ladder approach:

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
plus 3 price steps 13€ (P3)															
plus 2 price steps 12€ (P2)					150	150	130								
plus 1 price step 11€ (P1)	**150**	**150**	**150**	**150**	200	200	200	90	90	90	90	90	90	90	60
reserve price 10€ (P0)	200	200	200	200	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**190**
Available existing capacity	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*
Available incremental	*0*	*0*	*0*	*0*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*

[1] Please note that the CAM NC provides for small price steps close to the clearing price, in order to minimise under-sell. E.g. In year 15, the 150 units of existing capacity might be sold at 10.20€.

[2] The availability of existing capacity of course depends on many factors, i.a. on whether it was allocated in earlier years. An availability of existing capacity as high as in this example is rather unrealistic but assumed for the sake of the example.

The bold underlined volumes show that the allocation clears for 250 units of capacity (150 existing + 100 incremental) at P0 in years 5 to 14 and for 190 units in year 15.

Now it can be calculated whether the economic test is validated. In this case, there are no revenues from auction premia on existing capacity because all volumes clear at P0 in years 5 to 15.[3]

PV (present value of shipper commitments) =

*{100*10*(1/1.06^5)} + {100*10*(1/1.06^6)} + {100*10*(1/1.06^7)} + {100*10*(1/1.06^8)} +…+ {40*10*(1/1.06^15)} = 5996€*

This is less than the required 50% of the deemed investment costs of 13,000€ (i.e. 6,500€) for the release of 100 of incremental capacity. That means that the economic test is not validated and the investment in 100 units of incremental capacity would not be made.

Next, the low case of 50 units of incremental capacity is tested. This would yield the following clearing prices (again the bidding results from the normal CAM NC auction are used):

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
plus 3 price steps 13€ (P3)															
plus 2 price steps 12€ (P2)					150	150	130								
plus 1 price step 11€ (P1)	**150**	**150**	**150**	**150**	**200**	**200**	**200**	**90**	**90**	**90**	**90**	**90**	**90**	**90**	60
reserve price 10€ (P0)	200	200	200	200	250	250	250	250	250	250	250	250	250	250	**190**
Available existing capacity	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*
Available incremental	*0*	*0*	*0*	*0*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*

The bold underlined volumes show that the auction clears for 200 units of capacity (150 existing + 50 incremental) at P1 in years 5 to 7, at P1 for 90 units of existing capacity in years 8 to 14 (under-sell)[4], and at P0 for 190 in year 15 (150 existing + 40 incremental).

Again, the economic test is run:

PV (present value of shipper commitments) =

*{50*11*(1/1.06^5)} + {50*11*(1/1.06^6)} + {50*11*(1/1.06^7)} + {0*10*(1/1.06^8)} +…+ {40*10*(1/1.06^15)} = 1331€*

[3] If the auction premia in year 1 through year 4 are not earmarked for other uses as per CAM NC already, they also can be used to contribute to the economic test.

[4] In years 8 to 14, there is an undersell because the volume bids at P0 exceed the 200 units available.

On top of this, there is an auction premium from clearing 150 units of existing capacity at P1 in years 5 to 7 and 90 units at P1 in years 8 to 14. This is because the auction premium is beyond what is needed to cover costs of existing capacity and to be used for relieving congestion. Using the same discount rate of 6% for this existing capacity, the calculation results in a present value of committed cash flows of:[5]

*{150*1*(1/1.06^5)} + {150*1*(1/1.06^6)} + {150*1*(1/1.06^7)} + {90*1*(1/1.06^8)} + … + {90*1*(1/1.06^14)} = 652€*

Together (1331 + 652 = 1983€), this is more than 50% of the deemed investment cost of 3,500€ (i.e. 1,750€) for the low case, so the economic test is validated and the investment in the incremental capacity would go ahead.

4. Parallel bidding ladder approach

It may be desirable to differentiate the reserve prices of existing and incremental capacity due to different cost structures, and equally shippers may want to differentiate their bids according to whether incremental capacity is tested or just existing capacity is on offer. This is enabled with parallel bidding ladders.

With parallel bidding ladders, a bidding table opens for each capacity supply level: existing capacity, existing capacity plus the first level of incremental capacity, existing capacity plus the next higher level of incremental capacity, and so on, for each level of incremental capacity offered. In our scenario, this would result in three bidding tables with capacity supply volumes of 150, 150 + 50 = 200, and 150 + 100 = 250. The tables below illustrate the bidding results could look like. Please note that bidders have made use of the possibility to place different bids depending on the level of capacity on offer (if the bidding would be exactly as in the single bidding ladder approach, the result would be the same).

[5] Again, if the auction premia in year 1 through year 4 are not earmarked for other uses as per CAM NC already, they also can be used to contribute to the economic test.

Existing Capacity:

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
plus 3 price steps 13€ (P3)															
plus 2 price steps 12€ (P2)															
plus 1 price step 11€ (P1)	**150**	**150**	**150**	**150**	**150**	**150**									
reserve price 10€ (P0)	230	230	230	230	210	190	**150**	**90**	**90**	**90**	**90**	**90**	**90**	**90**	**60**
Available existing capacity	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*
Available incremental	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

"High case": 150 existing capacity + 100 units of incremental:

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
plus 3 price steps 13€ (P3)															
plus 2 price steps 12€ (P2)															
plus 1 price step 11€ (P1)	**150**	**150**	**150**	**150**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**190**
reserve price 10€ (P0) *	230	230	230	230											
Available existing capacity	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*
Available incremental	*0*	*0*	*0*	*0*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*

** P0 deemed insufficient to cover cost of incremental capacity investment (years 5 to 15).*

"Low case": 150 existing capacity + 50 units of incremental:

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
plus 3 price steps 13€ (P3)															
plus 2 price steps 12€ (P2)															
plus 1 price step 11€ (P1)	**150**	**150**	**150**	**150**	**200**	**200**	**190**								
reserve price 10€ (P0)	230	230	230	230	240	220	220	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**190**
Available existing capacity	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*	*150*
Available incremental	*0*	*0*	*0*	*0*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*

In this scenario, these tables show that bidding was generally higher for volumes where incremental capacity was on offer. It is assumed that shippers take the supply of capacity into account when making their decisions and try to enable a validation of the economic test, while at the same time avoiding as much as possible to bid for auction premia.

Furthermore, in the high case of 100 units of incremental capacity, a relation between P0 and the deemed investment cost has been established. The cells for bidding at P0 are blacked

out, signalling that a new – investment-specific – minimum price has been set[6]. Bidding starts at P1 for the full amount of capacity on offer in years 5 to 15. Consequently, the present value of these commitments amounts to:

*PV = (100*11*(1/1.06^5)) + … + (100*11*(1/1.06^14)) + (40*11*(1/1.06^15)) = 6,596 €*

This allows the economic test to be validated because it is more than 50% of 13,000€ investment (i.e. >6,500€) and the investment for 100 units of incremental capacity would go ahead.

[6] Please refer to the tariff part of the blueprint document for the different options how the tariff could be adjusted: 1) For all users, 2) only for users from the release of incremental capacity, 3) only for bidders for incremental.

Annex 5 – Worked examples of the three variations of open season procedures: ex-post allocation in CAM NC algorithm, full demand curve approach and pro rata

The purpose of this annex is to provide worked examples of how incremental capacity could be validated and allocated 1) in a two stage process with a commitment phase and then ex-post allocation using the CAM NC algorithm and 2) in a procedure where capacity commitments are provided with demand curves.

Please be reminded that an open season procedure should only be used where projects require a degree of flexibility, which the integration into the CAM NC long term allocation does not afford due to project size or complexity. (The preferred approach for incremental capacity should remain the integration into CAM NC).

1. Scenario and assumptions

In our scenario, let's assume existing capacity is sold out and the TSOs have assessed and identified a possible need for increased capacity across two market areas. The investment project would expand an existing connection between markets and is of such size and complexity that the simple integration into the long term allocation algorithm as per CAM NC is considered too inflexible.

After informal contacts with shippers the TSOs find that it is very likely that shippers are ready to commit to capacity bookings, in order to make the project happen. (This initial step is taken in all variations of open seasons outlined below.) Based on this indication of possible commitments, the TSO designs a project with two sizes of incremental capacity on offer at the IP.[7] The value of cumulative shipper commitments required to underpin the investment at both sides of the IP is subsequently published as an economic test input. The deemed investment costs are for both sides of the border:

- 110 units in a low case, 10,000€ of deemed investment costs
- 170 units in a high case, 18,000€ of deemed investment costs

This incremental capacity is first offered for year 5, as the investment project has a lead time of 4 years. The discount rate in this example is 6% and the economic test requirement is that 50% of costs be covered by the present value of shipper commitments (i.e. f = 0.5). The reserve price (P0) corresponds to the sum of the reference prices of the capacities in the bundled product and in this scenario, P0 is 10€.

[7] To make this example intelligible, the assumption is that no existing capacity is available for the years on offer. Existing capacity could however simply be offered along the expansion offered, which would not change the principles of allocation and economic testing (committed cash flows for existing capacity at the level of P0 would of course not count to the present value to be used to run the economic test).

2. Open season with ex-post allocation in CAM NC algorithm

Shippers are invited to submit unilaterally binding commitments to place specific volume bids at 10€ (P0) in the subsequent annual yearly CAM NC allocation procedure.

Let's assume that the following capacity requests are submitted:

Shipper A: 70 units in years 5-15, Shipper B: 40 units in years 5-15, Shipper C: 40 units in years 5-10.

This results in a table of aggregated capacity requests of:

	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
reserve price 10€ (P0)	150	150	150	150	150	150	110	110	110	110	110

This results in a present value of shipper commitments of:

*PV = {150*10*(1/1.06^5)} + … + {150*10*(1/1.06^10)} + {110*10*(1/1.06^11)} + … + {110*10*(1/1.06^15)} = 8430€*

As this is not adequate to validate the deemed investment cost for the high case of 170 units of incremental capacity (50% of 18,000€ = 9,000€), the TSO could go back to the shippers and suggest a slightly higher capacity request from each, indicating what is still missing in terms of commitment on an aggregated level.

In the present example, 5 units of additional commitments per shipper of commitments in the first 6 years of the project lifetime would suffice for an adequate present value:[8]

	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
reserve price 10€ (P0)	165	165	165	165	165	165	110	110	110	110	110

*PV = {165*10*(1/1.06^5)} + … + {165*10*(1/1.06^10)} + {110*10*(1/1.06^11)} + … + {110*10*(1/1.06^15)} = 9014€*

Alternatively, Shipper C may decide to extend its bid of 40 units from the initial period of five years (years 5-10) to ten years (years 5-15), resulting to the following table and present value (or any other volume or number of years that validate the economic test):

	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
reserve price 10€ (P0)	150	150	150	150	150	150	150	150	150	150	150

*PV = {150*10*(1/1.06^5)} + … + {150*10*(1/1.06^10)} + {150*10*(1/1.06^11)} + … + {150*10*(1/1.06^15)} = 9370€*

In either case, the investment decision for 170 units of incremental capacity can be taken. Thereby they become existing capacity and could subsequently be offered in the normal March long term allocation procedure according to CAM NC.

[8] Alternatively, if shippers are not ready to commit to higher volume requests, they could be asked whether they would commit to bid up to a higher price step. However, it is unlikely that shippers would voluntarily lock into an auction premium at this stage already, if higher volumes at the reference price achieve the same ends.

Given the level of unilateral commitments made, scarcity is not to be expected in this allocation procedure, therefore bidding and allocation should clear at P0.

There is an alternative way of matching capacity demand and supply, which does not require going back to shippers requesting revised bids (in order to remedy a mismatch of the project size on offer and the aggregated commitment volume). If commitments do not satisfy the economic test, the project size could be modified (if technically feasible and efficient). In the above example a project size of 160 units for up to 16,860 € deemed investment cost could be considered.

Only as a fall back, if this is not efficient, e.g. due to lumpiness of hardware investments, (and at the same time shippers are not ready to revise their bids) the solution would be to offer only the low case in the annual yearly March long term allocation procedure, which then is run according to the CAM NC as if it were existing capacity. This would result in capacity supply being below capacity demand, and the allocation would be a scarcity auction where willingness-to-pay determines who eventually is allocated capacity. The users who have committed before would then be free to decide whether they place bids at higher price steps or leave the auction.

3. Open Season with full demand curves

Alternative to the above approach, users could be requested to submit capacity demand volumes against a number of price steps. We apply the same assumptions in this example as set out above, where a high and a low case of incremental capacity are on offer.

Consider the following submissions being made:

Shipper A

	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
12€ (P2)	0	0	0	0	0	0	0	0	0	0	0
11€ (P1)	70	70	70	70	70	70	70	70	70	70	70
reserve price 10€ (P0)	70	70	70	70	70	70	70	70	70	70	70

Shipper B (with kill-or-fill condition across years)

	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
12€ (P2)	0	0	0	0	0	0	0	0	0	0	0
11€ (P1)	0	0	0	0	0	0	0	0	0	0	0
reserve price 10€ (P0)	40	40	40	40	40	40	40	40	40	40	40

Shipper C

	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
12€ (P2)	40	40	40	40	40	40	0	0	0	0	0
11€ (P1)	40	40	40	40	40	40	0	0	0	0	0
reserve price 10€ (P0)	40	40	40	40	40	40	0	0	0	0	0

From this, the following aggregated bidding table results:

	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15
12€ (P2)	40	40	40	40	40	40	0	0	0	0	0
11€ (P1)	110	110	110	110	110	110	70	70	70	70	70
reserve price 10€ (P0)	150	150	150	150	150	150	110	110	110	110	110

First, the high case of 170 units of incremental capacity is tested. The highest aggregated demand that can be satisfied with this supply can be used to calculate a present value of shipper commitments obtained:

*PV = {150*10*(1/1.06^5)} + … + {150*10*(1/1.06^10)} + {110*10*(1/1.06^11)} + … + {110*10*(1/1.06^15)} = 8429€*

As this is not adequate to validate the economic test (50% of 18,000 €), different measures can be taken:[9]

- First, due to the fact that the high case project is only narrowly not validated, the TSO could go back to shippers with the aggregated bidding and economic test result and ask for bid revision, either for higher bid prices or higher volumes, or a combination of both.
- If this fails, the project design could be adjusted, if efficiently possible, to reduce project capacity and deemed investment costs (e.g. to 150 units for 16,000 €)

If both fail, the lower case capacity offer of 110 units is tested:[10]

*PV = {110*11*(1/1.06^5)} + … + {110*11*(1/1.06^10)} + {70*11*(1/1.06^11)} + … + {70*11*(1/1.06^15)} = 6524€*

This would be sufficient to validate the economic test for the low case of 110 units capacity offer (50% of 10,000€) and all participants are allocated their respective bids at P1. (If the economic test were not validated on all levels, the investment would not be considered viable).

[9] It should be noted that due to the publication of aggregate requirements for any offer of capacity before the procedure, the only reason why this might happen is that bidders are uncertain what other participants will bid in the procedure. In a case where the economic test cannot be validated at P0 for a given project size due to the overall project costs, even with full subscription of all capacity, the requirement to insert higher bids is known to all parties in advance.

[10] From the aggregated table, the 110 units starting in year 11 at P0 could be entered. However, shipper 2 has provided a kill-or-fill condition across years.

Annex 6 – Worked example of open season with pro rata across two interconnection points

The purpose of this annex is to provide a worked example of how an open season procedure with pro rata would work in situations where there is likely to be demand across more than two hubs (entry-exit systems). With this approach, participants would be given the opportunity to make their bids conditional on acquiring capacity at several IPs and hence secure the same amount of capacity along a route[11].

Investment project: scenario and assumptions

At the IP A, 100 units of existing bundled capacity are on offer and the TSOs intend to offer 100 units of incremental capacity.

The total deemed investment costs for both sides of the IP A are 7,000€. The fraction of deemed investment costs to be underwritten by shippers' commitments for the economic test to be passed is f = 0.5. The discount rate is 6%.

The price for capacity is 10€/unit at IP A. This price is sufficient to pass the economic test and trigger the investment at IP A taking into account a realistic assumption on booking (for example, 57 incremental units booked on top of existing capacity during the whole commitment period).

At the IP B, 50 units of existing bundled capacity are on offer and the TSOs also intend to offer 100 units of incremental capacity.

The total deemed investment costs for both sides of the IP B are 8,000€. The fraction of deemed investment costs to be underwritten by shippers' commitments for the economic test to be passed f = 0.5. The discount rate is 6%.

The price for capacity is 8€/unit at IP B. This price is sufficient to pass the economic test and trigger the investment at IP B taking into account a realistic assumption on bookings (for example, 81 incremental units booked on top of the existing capacity during the whole commitment period).

For both IPs, the incremental capacity is first offered for year 5, with an investment project lead time of 4 years.

[11] Accommodating "conditional bids" does not seem possible when using a CAM NC auction-type process because participants cannot commit at IP A with the certainty that the clearing price at IP B will not exceed their willingness to pay. However, it may well be feasible to address conditional bids with design options other than open season with pro rata, for instance with full demand curves. Further investigation will be necessary to clarify this issue.

Requests for capacity:

Network users are invited to indicate the amount of capacity they wish to acquire for each gas year from year 5 to year 15, at 10€/unit at IP A and 8€/unit at IP B.

Two types of capacity requests can be submitted:

- Independent requests: no relation between capacity requests at IP A and IP B;
- Conditional requests: network users request the same amount of capacity at IP A and IP B (for the same years) with the guarantee that their final allocations will be equal at the two IPs: Should pro rata be applied at one or both IPs because of over-demand, their capacity allocations will be adjusted to the lowest amount of capacity awarded to them at any of the two IPs.

In our example, the following capacity requests are received for IP A (at reference price):

	Type of request	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+ 11	Y+12	Y+13	Y+14	Y+15
User 1	Independent	40	40	40	40	40	40	40	40	0	0	0
User 2	Conditional	60	60	60	60	60	60	60	60	60	60	60
User 3	Independent	40	40	40	40	40	40	40	40	20	20	20
User 4	Conditional	70	70	70	70	70	70	70	70	50	50	50
Aggregated demand		210	210	210	210	210	210	210	210	130	130	130
Available existing		*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*
Available incremental		*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*
Over-demand at IP A		10	10	10	10	10	10	10	10	0	0	0

And the following capacity requests are received for IP B (at regulated tariff):

	Type of request	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+ 11	Y+12	Y+13	Y+14	Y+15
User 2	Conditional	60	60	60	60	60	60	60	60	60	60	60
User 4	Conditional	70	70	70	70	70	70	70	70	50	50	50
User 5	Independent	50	50	50	50	50	50	0	0	0	0	0
Aggregated demand		180	180	180	180	180	180	130	130	110	110	110
Available existing		*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*	*50*
Available incremental		*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*
Over-demand at IP B		30	30	30	30	30	30	0	0	0	0	0

Processing capacity requests:

The above tables reveal situations where the aggregated amount of capacity requested by network users is higher than supply.[12]

[12] In this situation, if efficiently feasible, the TSO could re-design the project to accommodate all capacity requests. If this is not possible (e.g. due to lumpiness of investment), the TSO would proceed with the pro-rating approach.

Step 1: pro-rating capacity requests as if they were all independent requests

At the IP A, capacity requests of the four users (1, 2, 3 and 4) are pro-rated from Years 5 to 12. These are all reduced by 4.8% (10 of over-demand/210)

	Type of request	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+ 11	Y+12
User 1	Independent	38.10	38.10	38.10	38.10	38.10	38.10	38.10	38.10
User 2	Conditional	57.14	57.14	57.14	57.14	57.14	57.14	57.14	57.14
User 3	Independent	38.10	38.10	38.10	38.10	38.10	38.10	38.10	38.10
User 4	Conditional	66.67	66.67	66.67	66.67	66.67	66.67	66.67	66.67
Aggregated demand		200	200	200	200	200	200	200	200

At the IP B, capacity requests of the three users (2, 4 and 5) are pro-rated from Years 5 to 10. These are all reduced by 16.7% (30 of over-demand/180):

	Type of request	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10
User 2	Conditional	50	50	50	50	50	50
User 4	Conditional	58.33	58.33	58.33	58.33	58.33	58.33
User 5	Independent	41.67	41.67	41.67	41.67	41.67	41.67
Aggregated demand		150	150	150	150	150	150

Step 2: accommodating conditional requests

It appears that from Years 5 to 10, the conditional capacity requests are pro-rated at both IPs but the most signification reduction applies to requests at IP B (minus 16.7% vs. minus 4.8%). In order to meet these conditional capacity requests, the amount of capacity awarded to Users 2 and 4 at IP A is reduced down to the level of their respective allocations at IP B (50 units for User 2 and 58.33 units for User 4). The consequence is that the 15.48 units freed up at IP A from Years 5 to 10 are partly (re)allocated to the other users whose independent requests have initially been pro-rated.

Likewise, in Years 11 and 12, the conditional capacity requests are pro-rated at IP A (minus 4.8%), which requires applying the same adjustment to these conditional capacity requests at IP B (57.14 units for User 2 and 66.67 units for User 4). Here, 5 units are freed up at IP B but the independent request has not been pro-rated for these two years so no reallocation is performed.

There is no over-demand for Year 13 to 15 at any of the two IPs.

Step 3: provisional allocation

The results of the provisional allocation process would then be as follows:

For IP A:

	Type of request	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+ 11	Y+12	Y+13	Y+14	Y+15
User 1	Independent	40	40	40	40	40	40	38.10	38.10	0	0	0
User 2	Conditional	50	50	50	50	50	50	57.14	57.14	60	60	60
User 3	Independent	40	40	40	40	40	40	38.10	38.10	20	20	20
User 4	Conditional	58.33	58.33	58.33	58.33	58.33	58.33	66.67	66.67	50	50	50
Provisional allocation		188.33	188.33	188.33	188.33	188.33	188.33	200	200	130	130	130

For IP B:

	Type of request	Y+5	Y+6	Y+7	Y+8	Y+9	Y+10	Y+ 11	Y+12	Y+13	Y+14	Y+15
User 2	Conditional	50	50	50	50	50	50	57.14	57.14	60	60	60
User 4	Conditional	58.33	58.33	58.33	58.33	58.33	58.33	66.67	66.67	50	50	50
User 5	Independent	41.67	41.67	41.67	41.67	41.67	41.67	0	0	0	0	0
Provisional allocation		150	150	150	150	150	150	123.81	123.81	110	110	110

Running the economic test:

As shown above, pro-rating capacity requests and adjusting the results to meet the conditional requests may lead to provisional allocation results that are below supply. In other words, although the aggregated demand was initially above supply, some capacity may remain unsold. This capacity becomes “existing” capacity and subsequently enters the normal CAM NC allocation procedure and is offered at the next opportunity.

This is why the economic test can only be calculated once the capacity requests have been processed (NB: this is also why the allocation results are “provisional”, i.e. conditional on the validation of the test).

*PV (present value of shipper commitments **at IP A**) =*

*{88.33*10*(1/1.06^5)} +…+ {88.33*10*(1/1.06^10)} + {100*10*(1/1.06^11)} + {100*10*(1/1.06^12)} + {30*10*(1/1.06^13)} +…+ {30*10*(1/1.06^15)} = 4863€*

This is more than the required 50% of the deemed investment costs of 7,000 for the release of 100 of incremental capacity. That means that the economic test is validated at IP A.

*PV (present value of shipper commitments **at IP B**) =*

*{100*8*(1/1.06^5)} +…+ {100*8*(1/1.06^10)} + {73.81*8*(1/1.06^11)} + {73.81*8*(1/1.06^12)} + {60*8*(1/1.06^13)} +…+ {60*8*(1/1.06^15)} = 4358€*

This is more than the required 50% of the deemed investment costs of 8,000 for the release of 100 of incremental capacity at IP B. That means that the economic test is also validated at IP B.

The investment goes ahead at both IPs and the provisional allocation results become the final allocation results.