

DRAFT



memo

To: NEPOOL LTTR Working Group
From: ISO New England Market Development
Date: 12 October 2006
Subject: LTTR Design Summary – Revision 5

On 20 July 2006, the Commission issued its Long-Term Transmission Rights Final Rule, which requires each transmission organization that is a public utility with one or more organized electricity markets (primarily RTOs/ISOs) to make available long-term firm transmission rights that satisfy each of the seven guidelines established by the Commission in the LTTR Final Rule. Compliance filings are due 29 January 2007. The compliance filings must include either: (1) tariff sheets and rate schedules that make available LTTRs that satisfy each of the guidelines set forth in the final regulations, or (2) an explanation of how the transmission organization's current tariff and rate schedules already provide for long-term firm transmission rights that satisfy each of the guidelines. The LTTR Final Rule makes clear that implementation of LTTRs is a high priority for the Commission and that other important market initiatives of RTOs/ISOs might have to take a lower priority to ensure timely compliance.

The LTTR Final Rule adopts seven of the eight guidelines that were included in the LTTR Notice of Proposed Rulemaking (LTTR NOPR), and provides clarification of many of the issues that were raised regarding the LTTR NOPR. While the Commission repeatedly states that it will allow flexibility within each of the guidelines, it also emphasizes that each of the guidelines must be met.

The development and integration of a compliant LTTR solution within the existing FTR/ARR process poses major challenges. To meet the compliance filing deadline, the LTTR design must be materially complete no later than early October. The ISO, working with the stakeholders, has met this milestone. The design is currently working through the stakeholder process and is being reviewed by the implementation experts at the ISO.

This document includes a brief discussion of the guidelines and an evaluation of the current FTR design relative to the requirements of the Final Rule; some of the design principles and assumptions that Market Development and the stakeholders have agreed to; and a fairly detailed summary of the proposed LTTR design.

The LTTR Final Rule Guidelines

The final rule establishes the following guidelines for the design of an LTTR scheme:

1. An LTTR must specify a source, sink, and fixed quantity

The existing FTR system is consistent with this guideline. However, FERC expresses apparent preference for the PJM approach which allows for the direct conversion of ARR's so

allocated into FTRs. The ARR allocation system in New England is not based on a source, sink, and fixed quantity paradigm. Adopting the PJM approach could require substantial changes to market infrastructure.

2. *The value of the LTTR hedge is fixed for its term*

This is the so-called “full Funding” requirement. That is, the LTTR should fully offset any congestion costs along its defined path and quantity across its life. The existing FTR/ARR system in New England is not fully-funded, ARR revenue and congestion costs incurred may not be equal. Complying with the full funding requirement is a fundamental design change and may require allocating costs to parties that do not bear such exposure today.

3. *Parties that pay for transmission expansion are eligible to receive LTTRs*

This guideline broadly is consistent with the concept underlying the existing ISO’s Qualified Upgrade Award (QUA) process, although it is not perfectly analogous since the QUA process does not provide a right with a fixed value over its life. The QUA process as it applies to upgrades made to facilitate “delivery” rather than generation interconnection will likely have to be modified to meet the requirements of this guideline.

4. *LTTRs must have an effective minimum term of 10 years*

LTTRs can have lives in excess of 10 years, but they must have lives of at least 10 years. A ten year life can be achieved via the allocation of a single 10 year right or with a series of shorter term rights that can be rolled over periodically.

5. *Load Serving Entities (LSE) have priority over non-LSEs in the allocation of LTTRs*

Load Serving Entity is defined broadly in the rule to include any entity that purchases power at wholesale and sells it to an end-user. The rule does not prevent any class of participant from gaining LTTRs; rather it gives priority (right of first refusal) to LSEs. How this priority is recognized is a key component of the design and will be among the first design issues to be resolved.

6. *Rights are re-assignable to follow load*

To accommodate the requirements of retail choice, LTTRs can be reassigned to follow load. Depending on the design, reassignment logically will be mandatory or voluntary.

7. *LSEs do not have to participate in an auction to acquire LTTRs*

The final rule does not preclude the use of an auction to value or acquire rights, rather it specifies that an LSE need not offer a winning bid into that auction to acquire the right. This is a fundamental change from our existing design where all FTRs are acquired via auction.

In addition to the above, under the final rule, transmission organizations must make their transmission planning and expansion procedures and plans publicly available, including (but not limited to) both the actual plans and any underlying information used to develop the plans. Compliance with this part of the rule should be straightforward and appears largely consistent with the RSP process in place today.

Design Principles and Starting Assumptions

Market Development has worked with a NEPOOL working group for the last two and a half months to develop the design contained herein. This is not a consensus design. Not all market participants agree that this design meets the spirit or the letter of the Final Rule. That said, Market Development and most of the participants in the working group agree that it is a good design that meets the core design principles laid out below.

1. LSEs that receive an allocation of LTTRs should pay a price that reflects its market value.
2. An allocation of LTTRs to an LSE should not come at the expense of other market participants -- no cross subsidies.
3. The introduction of long-term rights should not undermine the ability of participants to take short term FTR positions.
4. The LTTR allocation scheme must be compatible with competitive markets -- the introduction of allocated rights should not create perverse incentives to hoard transmission rights or create opportunities for arbitrage.
5. The design should make the minimum number of changes to existing infrastructure required to comply with the Final Rule.
6. The existing ARR system should not be changed in any fundamental way.
7. Of the percentage of the network set aside for long term rights, a sufficient amount should be reserved to provide for the reasonable hedging needs of LSEs consistent with their priority status under the Final Rule.

LTTR Design Summary

DESIGN COMPONENT	BRIEF DESCRIPTION
Definitions	
Long Term Transmission Right (LTTR)	A financial instrument awarded via allocation or auction that confers on the holder the right to receive or the obligation to pay the congestion costs on a path defined by a source, sink and MW for one or more years.
Load Serving Entity (LSE)	A Market Participant that, in accordance with ISO New England System Rules, is supplying the Load Serving Obligation.
Load Serving Obligation	Real-Time Load Obligation, excluding pumps and station service load obligation.
Simultaneous Feasibility Test	As applied to the award of transmission rights determines whether transmission line flows are physically achievable without exceeding the MW flow limits.
Congestion Revenue Assurance Fund	A fund that assures that transmission rights are fully funded Delete current definition of Congestion Revenue Fund and review/revise associated business process and terms
Percent of network available to long-term rights	
Percent of network for LTTRs	Total not to exceed 50%: minimizes risk that LTTRs are infeasible primarily due to transmission outages and deratings during the year
Percent available for allocation	25% of the network capability will be reserved for LSEs seeking allocated LTTRs
Percent available for auction	Up to 25% of the network capability will be auctioned long-term. The percentage of the network available in each year will be a function of interest. If selling a 10 year strip, the available supply will be reduced each year to more closely match the expected interest. For Example: Yr 1 = 25%; Yr 2 = 22.5%; Yr 3 = 20%; . . . Yr 10 = 2.5%
Outages and deratings	The long-term allocation and auction process will use a network model that assumes all lines in. The ratings of facilities may be scaled by a value that reflects the average impact of deratings and outages on network performance. The monthly auctions will include actual outages and deratings.
ARR process	
Allocation to Congestion Paying LSEs	The methodology is essentially the same the process used today. Some changes will be required to reflect the replacement of the QUA process with the IARR process (see below) and the ARR\$ that LSEs receiving an allocation forgo. Some data currently not retained in a database will be required; changes are required to store these values.
ARR dollars	As is done today, negative paths will be set to zero and an SFT run to ensure the feasibility of the remaining paths. The ARR dollars for each LSE will be the budget available to fund an

DESIGN COMPONENT	BRIEF DESCRIPTION
	Allocated LTTR.
NEMA contracts	No anticipated changes to stages 3 and 4 of the ARR\$ allocation process
Foregone ARR \$	LSE forgoes its claim to a compensating portion of annual ARR revenues to pay for Allocated LTTRs. If the annual budget is inadequate, monthly ARR\$ will be used to make up the difference. <i>Refer to Exhibit 1 for an example.</i>
Allocated Long Term Transmission Rights	
Characteristics	<ul style="list-style-type: none"> • Sink is a Load Zone or a node in the case of an eligible ARD. • Source is an existing generator node or an external node • Settle as obligations • 24 hour rights • Marketable – i.e., transferable within the ISO settlement system. • Allocated LTTRs will be awarded in ten year increments. Once an allocation is made, it must be held for the duration of its term, unless sold back to the market.
Eligibility	Restricted to LSEs. Eligibility would be established annually.
Limitations	<ul style="list-style-type: none"> • Definition: <i>Maximum LTTR Allocation MW</i> – the coincident peak load recorded in the previous calendar year of the Load Assets that the LSE is serving at the time eligibility is evaluated, multiplied by the Load Zone load factor. • The total amount of Allocated LTTRs shall not exceed the Maximum LTTR Allocation MW. • Available Allocated LTTRs must be simultaneously feasibility with all previously Allocated LTTRs. • If Allocated LTTR nominations cause infeasibility on one or more network elements, the infeasibility will be resolved using an approach that maximizes the amount of LTTRs awarded.
Allocation process	<ul style="list-style-type: none"> • Allocated LTTR MW awards and costs are established at the time of allocation and fixed for the term of the rights. • Process Summary <ul style="list-style-type: none"> ○ On an annual basis: <ul style="list-style-type: none"> ○ ISO provides eligible LSEs with Maximum LTTR Allocation MW values per Load Zone based on historical year data, adjusted to reflect existing Allocated LTTR holdings ○ LSE nominates desired Allocated LTTR paths (source, sink, MW) ○ ISO evaluates and, if necessary, adjusts nominated MW amounts to ensure simultaneous feasibility with existing Allocated LTTRs and network limits. ○ LSE accepts or rejects modified nominations

DESIGN COMPONENT	BRIEF DESCRIPTION
	<ul style="list-style-type: none"> ○ ISO holds LTTR auction (opens for bids/offers and clears paths subject to SFT) ○ ISO computes ARR \$ available to each LSE and establishes Allocated LTTR annual budget. ○ Allocated LTTRs valued using current year auction prices. Allocated LTTR cost is compared to annual budget. (a) If the cost of the Allocated LTTRs is \leq the annual budget, the LSE will forgo annual ARR\$ in kind. (b) If cost of Allocated LTTRs $>$ annual budget, then the Allocated LTTR award will be scaled so that cost = budget. <p><i>Refer to Exhibit 2 for examples.</i></p>
Pricing	The Allocated LTTR MW is fixed for the term of the right. The cost may differ from year to year depending on the clearing prices for each subsequent year established by the long-term strip auction. If the LTTR auction does not produce a price in a year, the previous year's price will be used as a proxy.
Reassignment	<p>A LSE that acquires a Load Serving Obligation due to the transfer of a Load Asset or IBL may opt to accept a pro-rata share of the associated Allocated LTTRs, subject to continuing eligibility, for the remainder of their term. Such Allocated LTTRs are deemed reassigned.</p> <p>If the acquiring LSE opts not to take the Allocated LTTRs, the original holder has the following options:</p> <ul style="list-style-type: none"> (a) Sell the LTTRs into the market (b) Pay the cash equivalent value of the LTTRs and retain them
Settlement	Allocated LTTRs would settle differently than annual FTRs. The settlement would require a reduction in the ARR \$ distributed to Allocated LTTR holders.
Auctioned long term transmission rights	
Characteristics	<ul style="list-style-type: none"> ● Sink is a node, zone, hub, etc. ● Source is a node, zone, hub, etc. ● Settle as obligations ● 24 hour, on-peak, and off-peak rights ● Marketable, i.e., transferable within ISO settlement system at a price. ● One year instruments sold in strips out as long as ten years. ● Enhancement not required for compliance – multi-year instruments
Eligibility	Same eligibility criteria as apply to participation in existing FTR auction
Limitations	Auction clearing is subject to SFT; no other non-price based limitations
Auction design	<ul style="list-style-type: none"> ● Open auction accept bids/offers (bids/offers binding)

DESIGN COMPONENT	BRIEF DESCRIPTION
	<ul style="list-style-type: none"> • Auction clears subject to SFT • Auction results posted and establish Allocated LTTRs MW and costs • NOTE: While not required for compliance, consider the benefits of introducing a reconfiguration auction or multiple rounds.
Relationship to short term FTRs	Replaces annual FTR auction. Auctioned LTTRs and Allocated LTTRs can be sold into short term auctions: monthly, balance of year (when developed)
Pricing	Prices are established through the auction
Trading / transfer	Auctioned LTTRs may be traded on the secondary market or transferred through the ISO eFTR system at a price.
Settlement	Participants holding an Auctioned LTTR for the prompt year will pay the cost of that year's right prior to the prompt year's auction.
Participant funded system expansion	
Incremental Auction Revenue Right (IARR) mechanism	<ul style="list-style-type: none"> • Evaluate as options the incremental MW of LTTRs created by participant funded transmission upgrade between a source and a sink. • Award those MW in the form of a point-to-point IARR to the participant for as long as the participant supports the cost of the upgrade or 30 years, if shorter. [current QUA language: for as long as the participant supports the cost of the upgrade or for the life of the upgrade, if shorter.] • IARR awards are evaluated in order of project in service-date.
Allocated Incremental LTTR (ILTTR)	An IARR holder may nominate an ILTTR on that path in an amount up to the MW amount of the IARR.
ILTTR Characteristics	<ul style="list-style-type: none"> • Sink and source match the IARR source and sink; MW <= IARR MW • Settle as options • 24 hour rights • Marketable – i.e., transferable within the ISO settlement system. • One year term with rollover rights good as long as the participant supports the cost of the upgrade or 30 years, if shorter.
Full funding	
Auction Structure	<ul style="list-style-type: none"> • Long and short-term rights allocated and auctioned in independent tranches. That is, up to 25% of the network is allocated; up to 25% of the network is auctioned long term and up to 45% of the network is available for monthly FTRs. This approach is more conservative than the approach taken to today. While it will tend, all this the same, to sell fewer rights, it lowers the probability of underfunding. Assuming

DESIGN COMPONENT	BRIEF DESCRIPTION
	all lines in for the long-term allocation/auction counteracts the corresponding chance that the system would otherwise tend to generate large surpluses.
Congestion Revenue Assurance Fund	<ul style="list-style-type: none"> • Create a Congestion Revenue Assurance Fund (CRAF) <ul style="list-style-type: none"> ○ On a monthly basis, surplus congestion revenues would carry-forward to cover any shortfalls in a subsequent month. ○ Surplus congestion revenue would be put into the CRAF at year ○ Minimum and maximum funding levels would be established based on evaluation of underfunding exposure (actuarial assessment) ○ As needed to fund LTTRs or monthly FTRs the fund would be tapped.
Charge/credit allocator	<ul style="list-style-type: none"> • Network Load will be credited/charged for surpluses/shortfalls in the Congestion Revenue Assurance Fund
Regional System Plan tie-in	<ul style="list-style-type: none"> • Assess proposed new transmission projects using economic and reliability criteria. • Add an SFT component that assesses the impact of new projects on existing rights. To first order, new projects should not impair existing rights. • The economic transmission criteria should be expanded to look at the cost of transmission relative to charges to Network Load to fund Congestion Revenue Assurance Fund shortfalls. If the annual payments into the CRAF exceed the cost of transmission upgrades that would obviate the need for such charges to Network Load in the future, then the upgrade should be included in the RSP as an economic project.
Financial Assurance	Details still being developed.

Nomenclature used in following examples

$C_{i,j}$ = Allocated LTTR in year (i) for year (j)

$A_{i,j}$ = Network Capacity Available for Auction in year (i) for year (j)

$AC_{i,j}$ = Auctioned Cleared LTTR in year (i) for year (j)

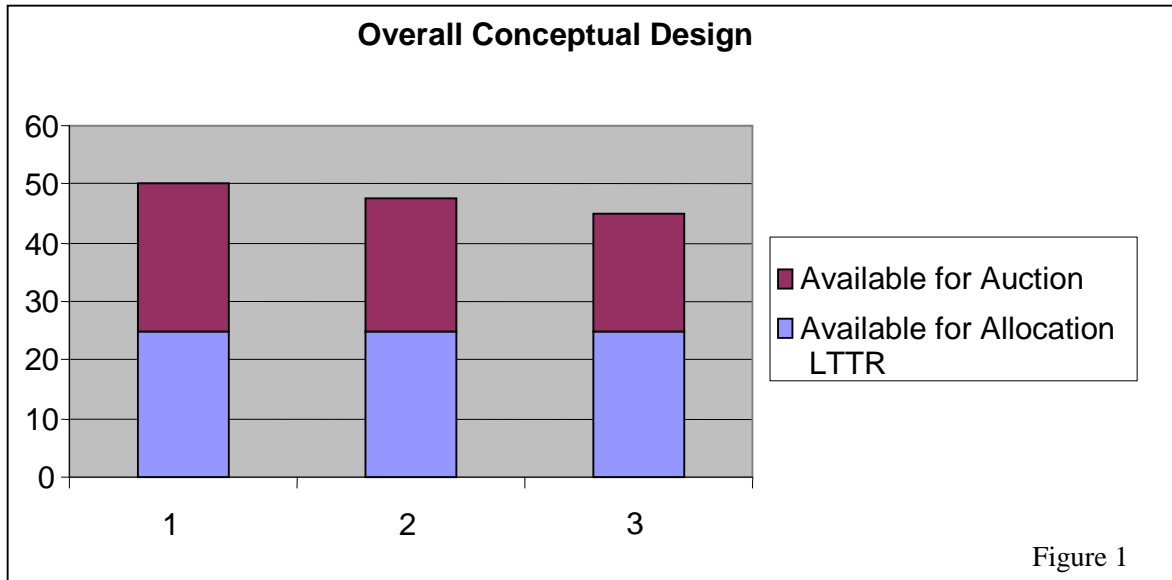


Figure 1

Figure 1:

The above chart shows the overall conceptual design. The percentage of the system that is available for Allocation in any given year is 25% (i.e. the allocated transmission rights must be simultaneously feasible when all limits in the transmission system are evaluated at 25% of their actual values). In the “Current Year” the amount available for Auction is 25% subject to any preloaded Auctioned LTTR.

In anticipation of diminishing demand for LTTRs in the auctions for $A_{1,1}$, $A_{1,2}$, $A_{1,3}$, ... $A_{1,10}$, the percentage supply of the network made available for auction is decreased by 2.5% each year. Therefore, in the auction conducted for $A_{1,2}$, 22.5% of the network is available for auction. The network capacity available for auction is independent of any allocated LTTRs, but does account for any LTTRs in that year that may already have been auctioned in a previous year. If the auction and the allocation in year $A_{1,2}$ are both fully subscribed, this could mean that the 25% of the network consumed by Allocated LTTRs, plus the 22.5% consumed by Auctioned LTTRs, would together consume a total of 47.5% of network capacity.

Similarly, in the auction $A_{1,3}$ the network capacity made available to the auction is reduced by an additional 2.5% to 20%. Auctions are conducted for 10 future years, and the network capacity available for Auctioned LTTRs in $A_{1,10}$ would therefore be reduced to only 2.5%.

We note, using $i=1$ and $j=2$ as an example, if both the 25% available for allocation and the 22.5% available for auction are fully subscribed, but the auctioned LTTRs were all effectively “counterflow” to the allocated LTTRs, then the amount of the network actually consumed by the combined allocated and auctioned LTTRs would be only $25\% - 22.5\% = 2.5\%$. However, the ISO considers this type of outcome to be highly unlikely. It is far more likely that LTTRs on desirable paths (from areas with low LMPs to areas with high LMPs) will be fully subscribed, and there will be little demand for the “counterflow” LTTRs. For this reason, the simplistic arithmetic of adding amounts of network capacity in different tranches of allocated and auctioned LTTRs is not an unreasonable way of conceptualizing the market design.

Auction Year 1

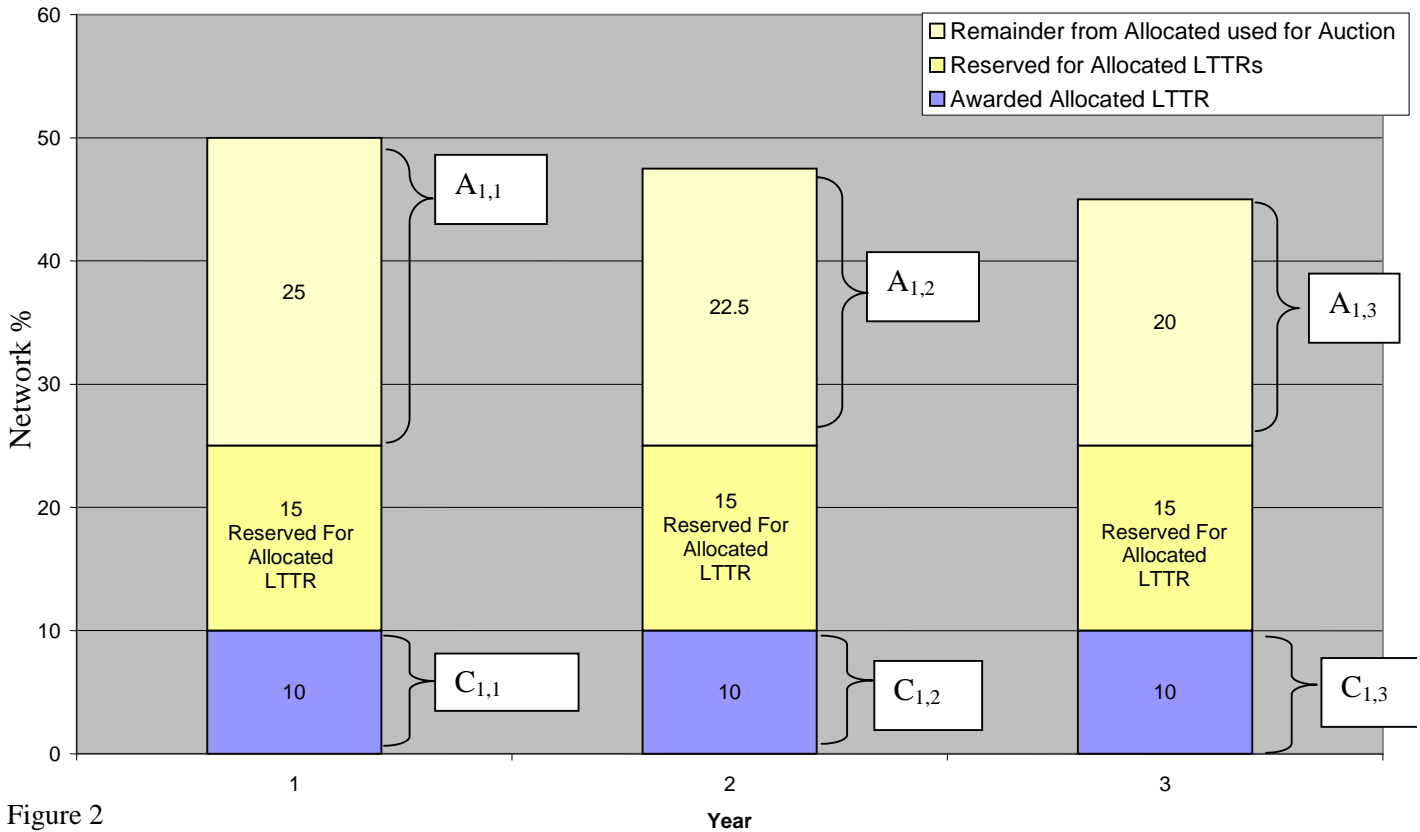


Figure 2

The Math behind the Graphs

Figure 2:

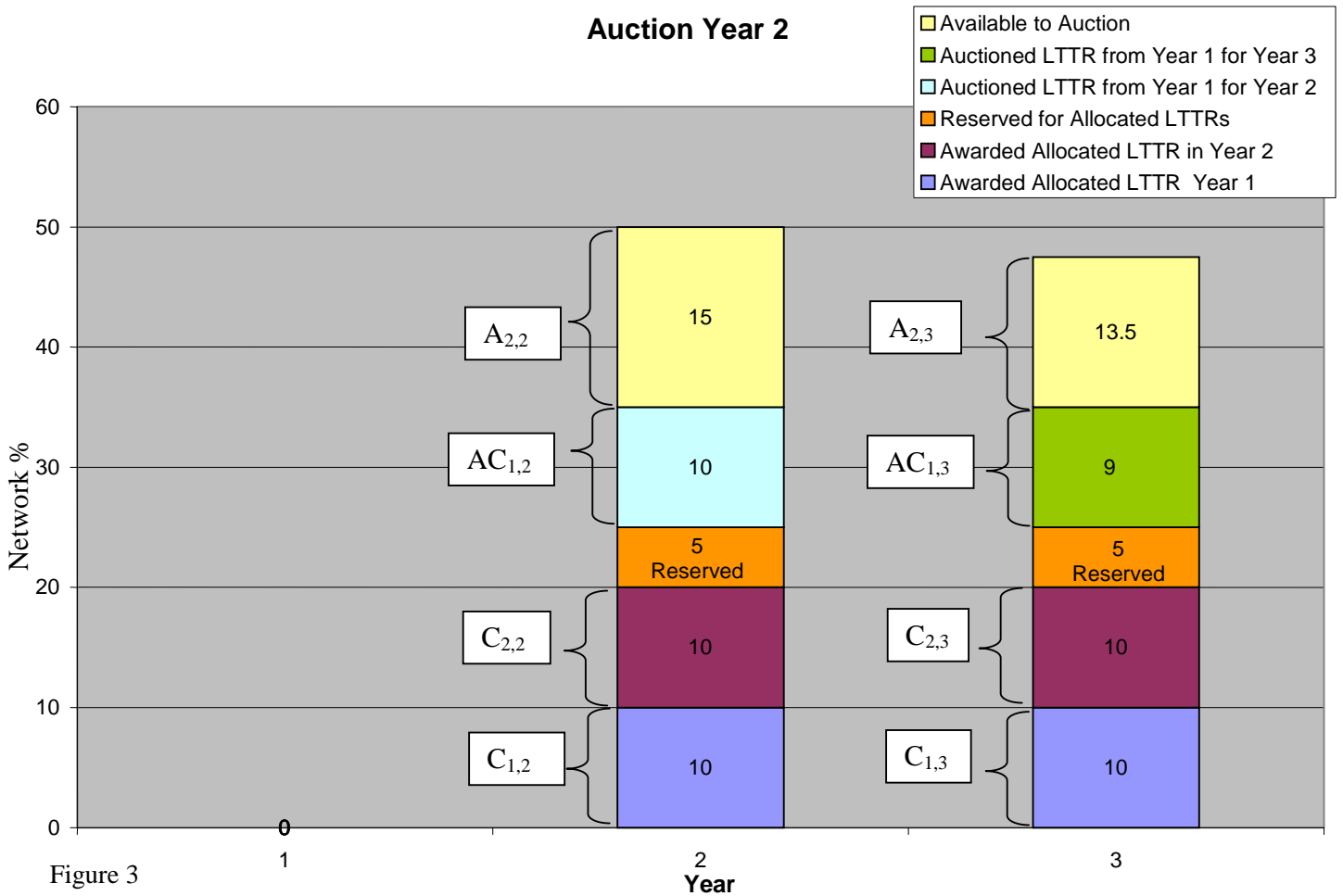
Reserved For Allocated LTTR is the amount that is left after the auction is completed

$C_{1,1}$	=	10	%
Total available for $A_{1,1}$	=	25	%
Total available for $A_{1,2}$	=	22.5	%
Total available for $A_{1,3}$	=	20	%

:
 In the example in Figure 2, where $i = 1$, LSE's have nominated LTTRs to be Allocated that are feasible using only 10% of the network. 25% of the system is available to be auctioned. The auction provides LTTR clearing prices which are used to value the Allocated LTTRs. An LSE with Allocated LTTRs must forgo a portion of their ARR\$ equal to the imputed value of their Allocated LTTRs. If an LSE has insufficient ARR\$, their Allocated LTTRs would be reduced proportionately to the level where the value equaled their ARR\$.

Auctions for the next nine future years would be conducted for 22.5%, 20%, ... and 2.5% of network capacity, respectively, accounting for (ie preloading) any LTTRs in each year that had been sold in previous auctions.

Auction Year 2



*Note: Allocated values which have been awarded in previous years are persisted through each year. (ie. C_{1,2} are the Allocated LTTR which were awarded in C_{1,1})

Figure 3:

Preloaded into system based on previous Auctions/Allocations

C_{1,1} = C_{1,2} = C_{1,3} = **10%** (Allocated values are persisted for 10 years)

AC_{1,2} = **10%**

AC_{1,3} = **10%**

Current Year:

C_{2,2} = C_{2,3} = **10%** (Allocated values are persisted for 10 years)

Total available for A_{2,2} = 25% - AC_{1,2} = **15%**

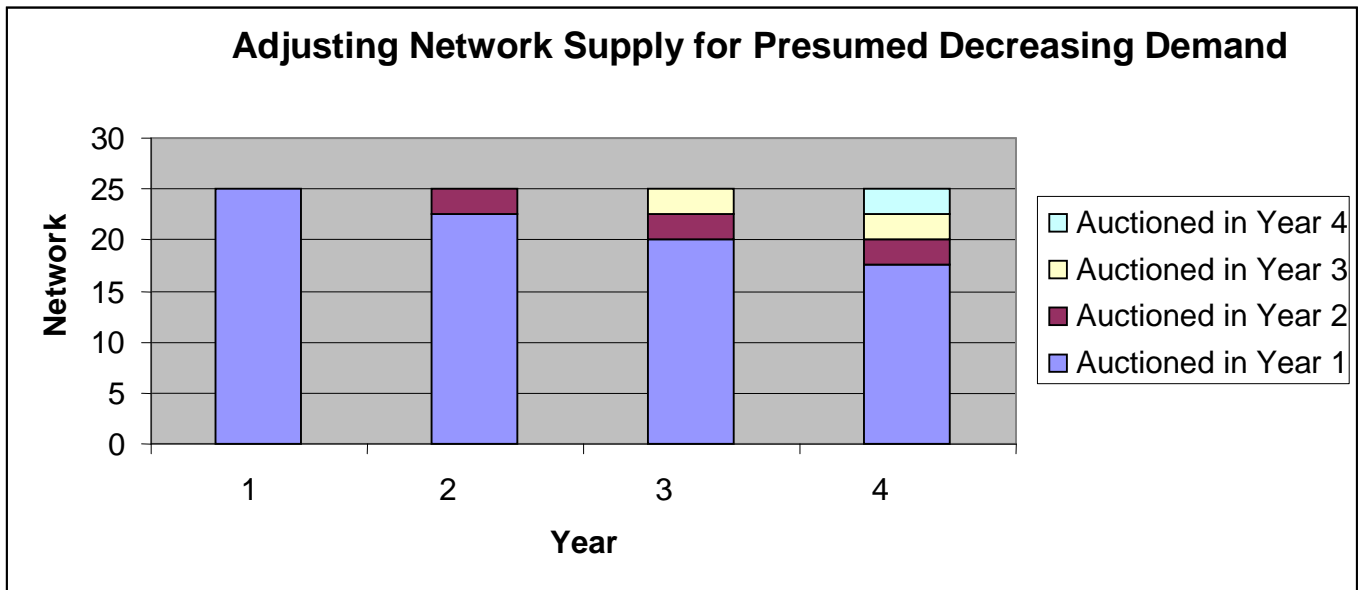
Total available for A_{2,3} = 22.5% - AC_{1,3} = **13.5%**

For year $i = 2$, new nominations for Allocated LTTRs are awarded, subject to new allocations plus previous being \leq 25% of the network. In this example, we assume that the new Allocated LTTRs consume an additional 10% of the network, such that total Allocated LTTRs are feasible using 20% of network capacity. Thus the total Allocated LTTRs are less than the 25% that could potentially have been allocated. The auction for $i=2$ is then conducted preloading the auctioned values from the previous year.

The prices that are produced during the current auction for $A_{2,2}$ will be used to Value the Allocated LTTR of the current year $C_{2,2}$. The $C_{1,2}$ Allocated LTTR, would already have been valued based on the $A_{1,2}$ auction results.

Note: All holders of Auctioned LTTR which cleared in the year 1 auction for year 2 ($AC_{1,2}$) must pay for these LTTRs prior to the auction for $A_{2,2}$ taking place.

Determining the ARR Dollars Available in Each Year to Fund Allocated LTTRs



LTTRs for a given future year will be sold through multiple auctions. In the example above, LTTRs for year 4 will have been auctioned at four separate times – i.e. when the year represented 4, 3 2, and 1. The revenues from each of these auctions are combined to become the pot of ARR dollars available for distribution in year 4.

As we conduct multiple Auctions, we would have multiple sources of ARRs in a given year.

	Year 1	Year 2	Year 3	Year 4
Auction Y1	ARR _{1,1}	ARR _{1,2}	ARR _{1,3}	ARR _{1,4}
Auction Y2	0	ARR _{2,2}	ARR _{2,3}	ARR _{2,4}
Auction Y3	0	0	ARR _{3,3}	ARR _{3,4}
Auction Y4	0	0	0	ARR _{4,4}

ARR_{y,x} is the Auction Revenues for the auction conducted in year (y) for year (x)

The table above shows how the Prices will be reflected in each future auction.

$$\text{Total ARR}\$_1 = \text{ARR}_{1,1}$$

$$\text{Total ARR}\$_2 = \text{ARR}_{1,2} + \text{ARR}_{2,2}$$

$$\text{Total ARR}\$_3 = \text{ARR}_{1,3} + \text{ARR}_{2,3} + \text{ARR}_{3,3}$$

$$\text{Total ARR}\$_4 = \text{ARR}_{1,4} + \text{ARR}_{2,4} + \text{ARR}_{3,4} + \text{ARR}_{4,4}$$

We will calculate the total ARR\$s for year by aggregating all of the ARR\$ produced by each auction.

- The “Total ARR\$” is distributed to all eligible entities
- LSE’s ARR\$ “bucket” is based of the share of the distribution of the “Total ARR\$”
- The Value of the Allocated LTTR will be determined by the auction in which the LSE was Allocated LTTRs. The value is $P_{y,x}$ where “y” is the year the LSE received the Allocated LTTR.

Example

Year 1

Total $ARR\$_1 = ARR_{1,1}$

Results of Year 1 LTTR Auction/Allocation

LSE Peak Load MW	100.0
Allocated LTTR Request	35.0
Allocated LTTR Award	35.0
Available ARR \$	7.2
Forgone ARR \$	7.2
Net ARR \$	0
Percent of ARR Revenues Forgone	100.0%

Year 2

$ARR_{1,2}$ { Auction Held in Year 1, for Year 2 }

Assume the value of the ARRs received in year 2 is \$1.52

$ARR_{2,2}$ { Current Auction Held }

Assume further, that the value of ARRs distributed to the LSE that are attributable to the $AC_{2,2}$ auction is \$4.76

$$\begin{aligned} \text{Total } ARR\$_2 &= 1.52 + 4.76 \\ &= 6.28 \end{aligned}$$

Finally, assume that the value of the LSE’s allocated rights $C_{2,2}$, based on prices imputed from the $AC_{2,2}$ auction, is 1.52. This will be the amount of the Forgone ARR\$.

LSE Peak Load MW	100.0
Allocated LTTR Award	35.0
Available ARR \$	6.28
Forgone ARR \$	1.52
Net ARR \$	4.76
Percent of ARR Revenues	76%

Exhibit 1

In the First year the cost of the LTTR can not exceed the LSE’s Budget.

	Assumed	Assumed	Assumed	Assumed	(D/B) x 100	A - A x E	B - B x E	max(G,0)
	A	B	C	D	E	F	G	H
LSE	ARR Allocator Peak Load MW used to Allocate ARR\$	ARR\$ Budget	Cost of LTTR	Forgone ARR\$	% of Budget	New ARR Allocator	ARR\$ Distribution	Final ARR\$ Distribution
LSE1	100	90	25	25	27.78%	72.22	65	65
LSE2	150	45	-10	0	0.00%	150.00	45	45
LSE3	300	240	135	135	56.25%	131.25	105	105
LSE4	250	200	200	200	100.00%	0.00	0	0
LSE5	150	45	0	0	0.00%	150.00	45	45
LSE6	100	90	0	0	0.00%	100.00	90	90
total		710		360				350

*Note: ARR\$ Budget is the Value of the Auction plus the value of the Allocated LTTRs using prices imputed from the auction.

In subsequent years it is possible for the cost of the LTTR to exceed the ARR\$ Budget

	Assumed	Assumed	Assumed	Assumed	(D/B) x 100	A - A x E	B - B x E	max(G,0)
	A	B	C	D	E	F	G	H
LSE	ARR Allocator Peak Load MW used to Allocate ARR\$	ARR\$ Budget	Cost of LTTR	Forgone ARR\$	% of Budget	New ARR Allocator	ARR\$ Distribution	Final ARR\$ Distribution
LSE1	100	90	25	25	27.78%	72.22	65	65
LSE2	150	45	-10	0	0.00%	150.00	45	45
LSE3	300	240	135	135	56.25%	131.25	105	105
LSE4	250	180	200	200	111.11%	-27.78	-20	0
LSE5	150	45	0	0	0.00%	150.00	45	45
LSE6	100	90	0	0	0.00%	100.00	90	90
total		690		360				350

In the above example LSE 4 doesn’t have enough ARR\$ Budget to cover the Cost of the LTTR. As a result the % of the Budget is 111.11%. The ISO will reduce the monthly ARR Allocation of the LSE in the monthly auctions until \$20 shortfall reimbursed through foregone monthly ARR\$

Exhibit 2

List of Examples: (Brief description): Example Illustrating Scaling in the First year.

Example 1: Nominated “Allocated LTTR” LSE Sink in Congested Zone

Using the assumptions for LTTR allocation, a LSE can only nominate up to the Zonal Load Factor multiplied by the LSE’s Peak Load. In this example the maximum the LSE can nominate is 56 MW

Example 2: Nominated “Allocated LTTR” LSE Sink in Relatively Uncongested Zone

The sink is located in a relatively uncongested Zone. Using the assumptions for LTTR allocation, a LSE can only nominate up to Zonal Load Factor multiplied by the LSE’s Peak Load. In this case, the LSE doesn’t have enough ARR \$ to receive their full nomination.

Example 3: Nominated “Allocated LTTR” LSE Sink in Relatively Uncongested Zone + Counterflow Nomination

Building on Example 2, the LSE has nominated 30 MW from ME -> VT adding a counterflow nomination from NEMA -> VT allows the LSE to receive its nomination

Example 4: Nominated “Allocated LTTR” LSE Sink in Congested Zone + allocation of cost over 3 yrs

Using Example 1 as a base case, in this example we examine how over time the ARR \$ surrendered would change, even though the MWs of LTTR allocated stays the same. This example uses the annual average historical Day-Ahead Congestion Components Reported

Description of ARR Stages

Stage 1 – ARRs are initially assigned based on 1) energy deliveries pursuant to Excepted Transactions and 2) load ratio share of the capability of every New England generator and tie line source (with adjustments to generation and load associated with Excepted Transactions).

Stage 2 – Any of the initially assigned ARRs that have a negative value in the associated FTR Auction are eliminated to assure that no negative revenues are allocated. The remaining ARRs are subjected to a SFT) to assure that the transmission system can support the awarded set of ARRs under normal system conditions and to assure that the ARR payments do not exceed the auction revenues.

Stage 3 – The ARRs allocated to NEMA LSEs in Stage 2 are removed and replaced by an initial assignment of Stage 3 ARRs defined by certain qualifying long-term contracts (“NEMA Contracts”) for delivery to points in NEMA

Stage 4 – A set of Stage 4 ARRs are defined for all NEMA LSEs based on their Stage 2 allocations, with those of LSEs holding NEMA Contracts being adjusted to account for ARRs allocated to them in Stage 3. A final SFT is conducted with only the Stage 4 ARRs being subject to reduction. The fourth stage of the allocation determines the final allocation of ARRs for a given auction.

Example 1: Nominated Allocated LTTR- LSE Sink in Congested Zone

LTTR Allocations:

Load Factor CT = 56%

Max Allocated LTTR MW nomination allowed: 56 MW

Sink Zone	Source Zone	A	Allocated LTTR Requests Adjusted for Interface Limits & SFT	B	C	D	E	F	G	H	I	J	Reconfiguration Auction	
		Allocated LTTR MW Nominated												ARR \$/MW
CT	CT	0	Allocated LTTR Requests Adjusted for Interface Limits & SFT	\$ -	Stage 1 ARR MW Allocation	25%	25	\$ -	Stage 2 ARR MW Allocation	\$ -	0.0%	-	-	
CT	ME	25		\$1.76		10%	10	\$ 17.60		\$ 17.60	\$ 44.0	49.4%	-	25
CT	NEMA	25		\$0.67		12%	12	\$ 8.04		\$ 8.04	\$ 16.8	18.8%	-	25
CT	NH	0		\$1.25		12%	12	\$ 15.00		\$ 15.00	\$ -	0.0%	-	-
CT	RI	0		\$1.12		6%	6	\$ 6.72		\$ 6.72	\$ -	0.0%	-	-
CT	SEMA	0		\$1.29		19%	19	\$ 24.51		\$ 24.51	\$ -	0.0%	-	-
CT	VT	0		\$0.76		4%	4	\$ 3.04		\$ 3.04	\$ -	0.0%	-	-
CT	WCMA	0		\$1.18		12%	12	\$ 14.16		\$ 14.16	\$ -	0.0%	-	-
TOTAL		50		\$ 0.89			100	\$ 89.07		\$ 89.07	\$ 60.8	68.2%	-	50

Summary Table:

LSE Peak Load MW	100.0
Allocated LTTR Nominated	50.0
Allocated LTTR Award	50.0
Available ARR \$	89.1
Forgone ARR \$	60.8
Net ARR \$	28.3
Percent of ARR Revenues foregone	68.2%

Example 2: Nominated Allocated LTTR LSE Sink in Relatively Uncongested Zone

LTTR Allocations:

Load Factor in VT = 69 %

Max Allocated LTTR MW nomination allowed: 69 MW

		A	Allocated LTTR Requests Adjusted for Interface Limits & SFT	LTTR Auction Held	Stage 1 ARR MW Allocation	C	D	E	Stage 2 ARR MW Allocation	F	G	H	I	J	Reconfiguration Auction	
Sink Zone	Source Zone	Allocated LTTR MW Requested				ARR \$/MW	Gen Distribution by Zone	ARR MW		Stage 1 ARR \$	Stage 2 ARR \$	Class A Right \$	% of ARR \$	Scaled LTTR MW Award		LTTR MW Award
VT	CT	0				\$ (4.36)	25%	25		\$ (109.00)	\$ -	\$ -	0.0%	-		-
VT	ME	50				\$ 2.52	10%	10		\$ 25.20	\$ 25.20	\$ 126.0	282.3 %	17.71		17.71
VT	NEMA	0				\$ (2.87)	12%	12		\$ (34.44)	\$ -	\$ -	0.0%	-		-
VT	NH	0				\$ 1.10	12%	12		\$ 13.20	\$ 13.20	\$ -	0.0%	-		-
VT	RI	0				\$ 0.31	6%	6		\$ 1.86	\$ 1.86	\$ -	0.0%	-		-
VT	SEMA	0				\$ 0.23	19%	19		\$ 4.37	\$ 4.37	\$ -	0.0%	-		-
VT	VT	0				\$ -	4%	4		\$ -	\$ -	\$ -	0.0%	-		-
VT	WCMA	0				\$ (0.31)	12%	12		\$ (3.72)	\$ -	\$ -	0.0%	-		-
TOTAL		50	\$ 0.45		100	\$ (102.53)	\$ 44.63	\$ 126.0	282.3 %	17.71	17.71					

Summary Table:

LSE Peak Load MW	100.0
Allocated LTTR Nominated	50.0
Allocated LTTR Award	17.7
Available ARR \$	44.6
Forgone ARR \$	44.6
Net ARR \$	0
Percent of ARR Revenues foregone	100.0%

Example 3 – Nominated Allocated LTTR LSE Sink in Relatively Uncongested Zone + Counterflow Nomination

LTTR Allocations:

		A	Allocated LTTR Requests Adjusted for Interface Limits & SFT	LTTR Auction Held	Stage 1 ARR MW Allocation	C	D	E	Stage 2 ARR MW Allocation	F	G	H	I	J	Reconfiguration Auction
Sink Zone	Source Zone	Allocated LTTR MW Requested													
VT	CT	0			25%	25	\$ (109.00)		\$ -	\$ -	0.0%	-	-		
VT	ME	35			10%	10	\$ 25.20		\$ 25.20	\$ 88.2	197.6%	34.60	34.60		
VT	NEMA	15			12%	12	\$ (34.44)		\$ -	\$ (43.1)	-96.5%	14.83	14.83		
VT	NH	0			12%	12	\$ 13.20		\$ 13.20	\$ -	0.0%	-	-		
VT	RI	0			6%	6	\$ 1.86		\$ 1.86	\$ -	0.0%	-	-		
VT	SEMA	0			19%	19	\$ 4.37		\$ 4.37	\$ -	0.0%	-	-		
VT	VT	0			4%	4	\$ -		\$ -	\$ -	0.0%	-	-		
VT	WCMA	0			12%	12	\$ (3.72)		\$ -	\$ -	0.0%	-	-		
TOTAL		50				100	\$ (102.53)		\$ 44.63	\$ 45.2	101.2%	49.42	49.42		

Summary Table:

LSE Peak Load MW	100.0
Allocated LTTR Nominated	50.0
Allocated LTTR Award	49.4
Available ARR \$	44.6
Forgone ARR \$	44.6
Net ARR \$	0
Percent of ARR Revenues foregone	100.0%

Example 4: Nominated “Allocated LTTR” LSE Sink in Congested Zone + allocation of cost over 3 yrs

Price Table:

Sink Zone	Source Zone	ARR \$/MW based on annual average Day-Ahead Congestion Components Reported		
		2003	2004	2005
CT	CT	\$ -----	\$ -----	\$ -----
CT	ME	\$ 1.76	\$ 2.34	\$ 6.88
CT	NEMA	\$ 0.67	\$ 0.32	\$ 1.49
CT	NH	\$ 1.25	\$ 1.35	\$ 5.46
CT	RI	\$ 1.12	\$ 0.88	\$ 4.67
CT	SEMA	\$ 1.29	\$ 0.88	\$ 4.59
CT	VT	\$ 0.76	\$ 0.93	\$ 4.36
CT	WCMA	\$ 1.18	\$ 0.81	\$ 4.05

Summary Table:

	2003	2004	2005
LSE Peak Load MW	100	100	100
Allocated LTTR Nominated	50	50	50
Allocated LTTR Award	50	50	50
Available ARR \$	89.1	78.9	333.5
Forgone ARR \$	60.6	66.5	209.3
Net ARR \$	28.3	12.4	124.2
Percent of ARR Revenues foregone	68.2%	84.3%	62.6%