

2009 New York Slot Auctions Bidder Seminar

5 December 2008



New York Slot Auction Bidder Seminar Agenda

- | | |
|----------|-------------------------------------|
| 8:30 am | Introduction |
| 8:50 am | The Slots |
| 9:15 am | The Auction and the Auction Manager |
| 10:40 am | Break |
| 11:00 am | The Auction Software System |
| 11:30 am | Pre- and Post-Auction Process |
| 12 noon | Q&A |
| 12:45 pm | Closing |
| 1:00 pm | End of Bidder Seminar |

Introduction

DJ Gribbin , General Counsel , Department of Transportation

Nancy LoBue, Acting Assistant Administrator, Aviation Policy,
Planning and Environment, Federal Aviation Administration

FAA's congestion management rules

The recent congestion management rules aim to create a more efficient allocation of slots, provide opportunities for new entry, and reduce congestion.

Key attributes of these rules are:

- The majority of slots will be “grandfathered” to current operators
- The portion of slots that are not grandfathered or retired will be made available for auction over a five year period.
- The slots leased via auction will not be subject to the use-or-lose requirements associated with the grandfathered slots.

Background and rationale

- The auction will encourage a portion of the slots at these capacity constrained airports to be allocated to those users that value them the most.
- The auction is designed to allow complete flexibility for bidders to specify the price they are willing to pay for each combination of slots they wish to acquire at an airport
- The net proceeds will be used for aviation capacity enhancement and delay mitigation projects in the New York metropolitan area.
- The notion of using an auction to encourage greater airport efficiency and reduced congestion is not a new idea, FAA has sponsored research in this area for over a decade.

- 5 -

Definition of a Slot

“For the purposes of the Auctions, a Slot is an operational authority to conduct a *single* Scheduled Operation, *seven days a week*, during a specific 30-minute period at a specific airport.

For the avoidance of doubt, even for an airport in which slots are defined on a daily basis, the Slot that is bid for or allocated in an Auction will refer to a seven-day-per-week authority.”

—*Bidder Information Package (para. 14)*

- 6 -

Categories of slots defined in the congestion management rules

Three different types of slots:

- 1. Common slots:** These slots are not subject to reallocation or retirement (ten year life).
- 2. Limited slots:** These slots expire within the first five years of the rules and are subject to reallocation by auction or retirement (LaGuardia).
- 3. Unrestricted slots:** These slots are limited slots which have been successfully acquired through an auction (lives will vary depending on when acquired, but will terminate at the end of the rules -- March 2019)

- 7 -

Slot parameters: applicable to all airports

- Airport:
 - LaGuardia Airport (**LGA**);
 - John F. Kennedy International Airport (**JFK**); or
 - Newark Liberty International Airport (**EWR**).
- Unrestricted (auctioned) slots are not subject to usage requirements
- Reserve Price: \$10,000 (Peak) or \$100 (Non-Peak)
- Slot can be subleased, transferred, or traded in accordance with the final rule

- 8 -

Slot parameters: specific to individual airports

LGA

- **Lease duration:**
8 Mar 2009 – 9 Mar 2019
- **Regulated Times:**
6 am – 10 pm ET

JFK & EWR

- **Lease duration:**
25 Oct 2009 – 30 Mar 2019
- **Regulated Times:**
6 am – 11 pm ET

- 9 -

Slots available in the auction

- For any particular 30 minute time period during the regulated hours, there may be 0, 1, or more slots available for auction at each airport.
- Slots identified to be auctioned for each airport will be announced on 29 December 2008.

- 10 -

The Auction and Auction Manager

Lawrence Ausubel, Chairman, Power Auctions LLC

Peter Cramton, Chairman, Market Design Inc.

About us

- **Market Design Inc. (www.marketdesign.com)**
 - Founded in 1995 by professors of economics, specializing in the design of auction markets
 - World leader in design and implementation of high-stakes auction markets
- **Power Auctions LLC (www.powerauctions.com)**
 - Affiliate of MDI, formed in 2003, as the primary entity for developing and customizing auction software
 - Holds PowerAuctions™ software platform (used for all of our auctions)

Our experience in high-stakes auctions

- EDF generation capacity auctions
 - Virtual power plant auctions — 6 GW of French electricity
 - 30 quarterly auctions (Sept 2001 – present) totaling over €9 billion
- ISO-New England Forward Capacity Auction
 - Procurement of generating capacity in NE
 - First auction was in February 2008; second auction begins on 8 December 2008
 - \$1.75 billion in value in first auction
- Endesa-Iberdrola VPP auctions
 - For the two dominant Spanish electricity companies
 - 5 quarterly auctions and 1 biannual auction (June 2007 – present)
- Electrabel VPP capacity auctions
 - Virtual power plants — 1.2 GW of Belgian Electricity
 - 7 quarterly auctions (2003 – 2005)
- E.ON Ruhrgas Germany gas release program
 - Series of six annual auctions (2003 – 2008)
- E.ON Ruhrgas Hungary gas release program
 - Series of five annual auctions (2006 – 2010)
- Danish Oil and Natural Gas gas release programme
 - Series of six annual auctions (2006 – 2011)
- Gaz de France gas release programme
 - Single auction (Oct 2004)
- Total gas release program
 - Single auction (Oct 2004)
- Gaz de France gas storage auction
 - Single auction (Feb 2006)

- 13 -

Our experience in high-stakes auctions

- Electricity and Gas auctions worldwide
 - Have successfully implemented more than 60 large auctions (2001 – present)
- Internet Corporation for Assignment of Names and Numbers (ICANN)
 - Auction consultant for new generic top level domains and single-character domain names (2008 – present)
- UK spectrum auctions for Ofcom
 - Design of combinatorial clock auction and optimization method (2006 – 2008)
- Federal Aviation Administration airport slot auction
 - Demonstration auction for industry (2005)
- Trinidad and Tobago spectrum auction
 - Clock followed by combinatorial auction (2005)
- UK emissions trading scheme auction
 - World's first auction for greenhouse gas emission reductions (2002)

- 14 -

Auction Methodology

Peter Cramton, Market Design Inc.

Auction methodology

- Single round combinatorial auction
- Submit up to 2,000 mutually exclusive Bids that comprise your Total Bid
- Bids consist of a package of Quantities for requested Slots and an associated Price for the package

Total Bid

Slot	Supply	Bid 1	Bid 2	Bid 3
6:00 – 6:30	0			
6:30 – 7:00	2		1	2
7:00 – 7:30	1	1	1	
7:30 – 8:00	0			
8:00 – 8:30	0			
8:30 – 9:00	2	1	1	2
9:00 – 9:30	3			
9:30 – 10:00	0			
		\$ 30,000	\$ 50,000	\$ 70,000

Maximum bidder is willing to pay →

Note that the Bidder can only win one of the three Bids placed

If the Bidder wins with Bid 2

Slot	Supply	Bid 2
6:00 – 6:30	0	
6:30 – 7:00	2	1
7:00 – 7:30	1	1
7:30 – 8:00	0	
8:00 – 8:30	0	
8:30 – 9:00	2	1
9:00 – 9:30	3	
9:30 – 10:00	0	
		\$ 50,000
		\$ 45,000

Maximum bidder is willing to pay →

Actual price paid (determined by algorithm) →
 (can't be higher than the specified \$50,000)

Key design choices

- Package bids (mutually exclusive)
 - Win a single package of Slots or nothing
 - No exposure problem
- Single-round sealed-bid
 - Must express preferences for all packages of interest at a single time

- 19 -

Determining the auction outcome

- Step 1. Winner determination
- Step 2. Pricing

- 20 -

Step 1. Winner determination

- Winners are chosen as the feasible assignment that maximizes total as-bid value
- If multiple feasible assignments achieve the maximal value,
 - Assignment with greatest number of slots sold is selected
 - Any remaining ties are broken randomly

- 21 -

Step 2. Second prices (bidder-optimal core pricing)

- Unless other bidders together matched exactly your winning bid, you pay *less* than your bid
- Your payment depends on the bids of others (competitive pricing)
- Similar to Vickrey's second-price auction where you pay the smallest amount that still makes you a winner
- Winners pay the smallest amount consistent with competitive (core) pricing
 - Assignment maximizes total value
 - No coalition of bidders offered the auctioneer more
 - If multiple prices achieve minimal total payments, then prices closest to Vickrey prices are selected

- 22 -

Bidder-optimal core pricing

- Minimize total payments subject to core constraints
- Core = assignment and payments such that they are:
 - Efficient: Value maximizing assignment
 - Unblocked: No subset of bidders prefers to offer seller a better deal

- 23 -

Optimization

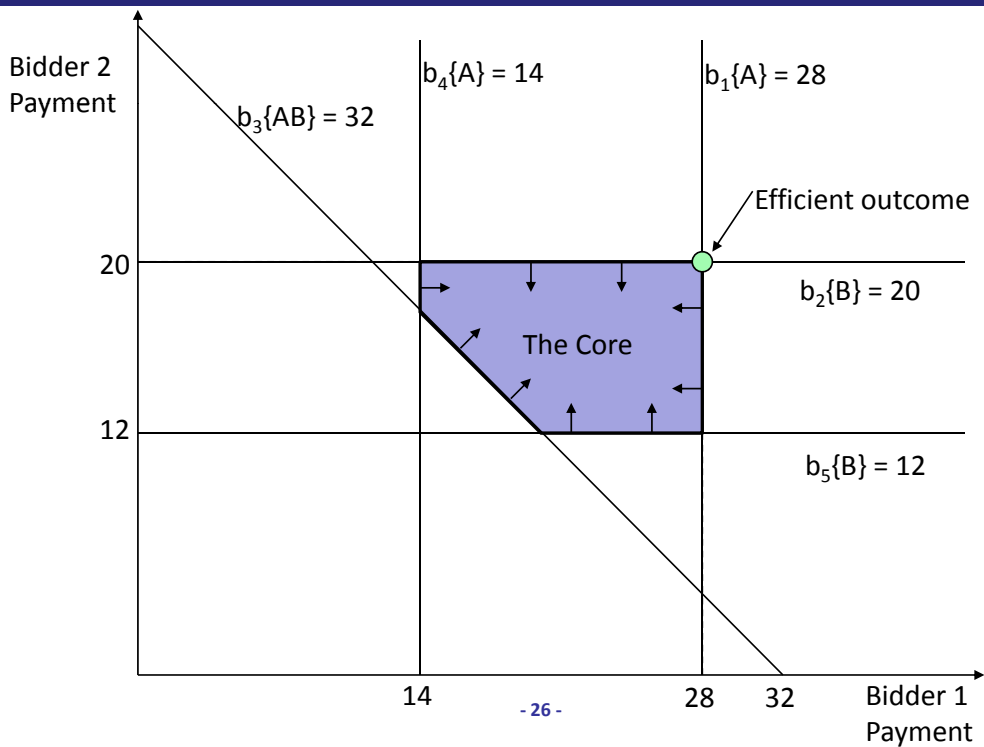
- Core point that minimizes payments readily calculated
 - Solve Winner Determination Problem
 - Find Vickrey prices
 - Constraint generation method (Day and Raghavan 2007)
 - ◆ Find most violated core constraint and add it
 - ◆ Continue until no violation
- Tie-breaking rule for prices is important
 - Minimize distance from Vickrey prices

- 24 -

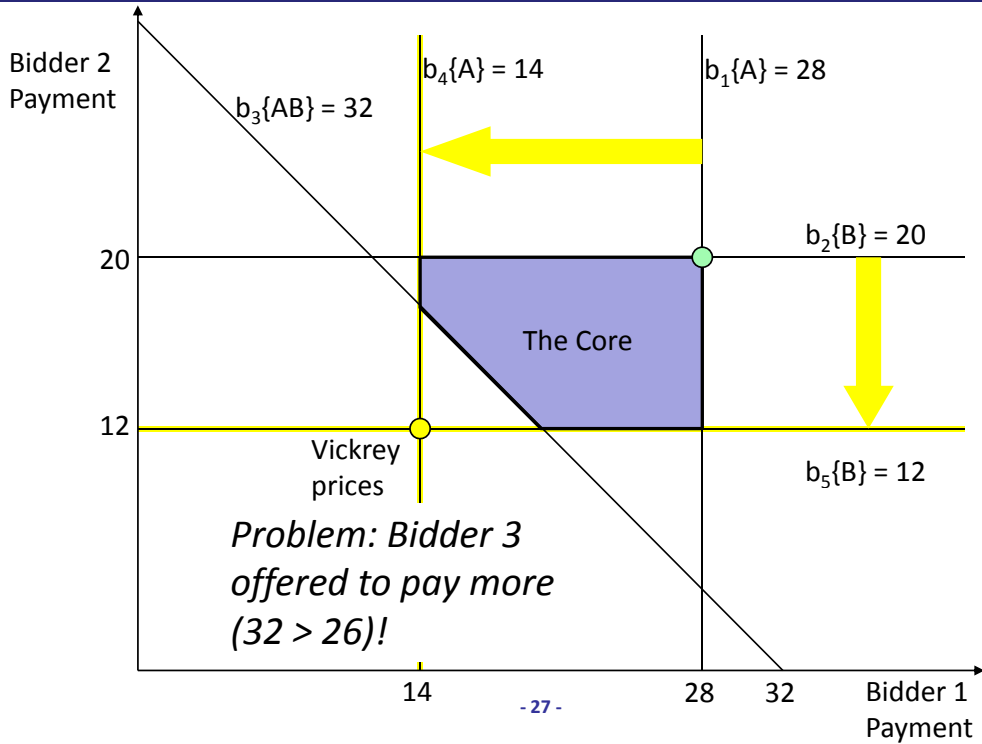
5 bidder example with bids on {A,B}

- $b_1\{A\} = 28$ ← Winners
- $b_2\{B\} = 20$ ← Winners
- $b_3\{AB\} = 32$ Vickrey prices:
- $b_4\{A\} = 14$ $p_1 = 14$
- $b_5\{B\} = 12$ $p_2 = 12$

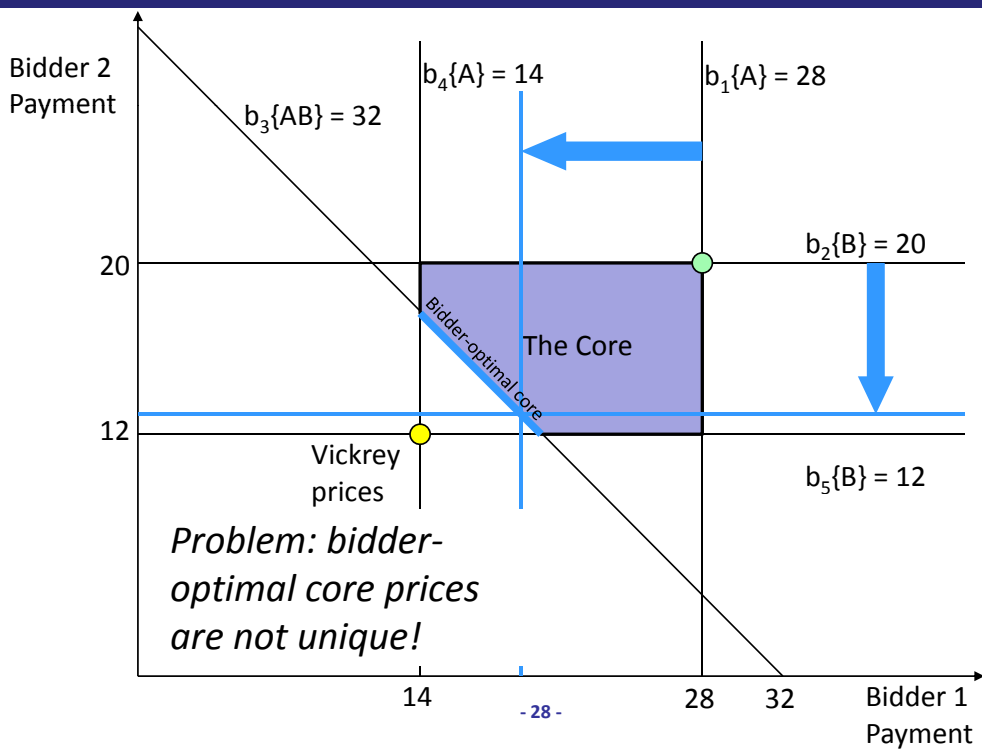
The Core



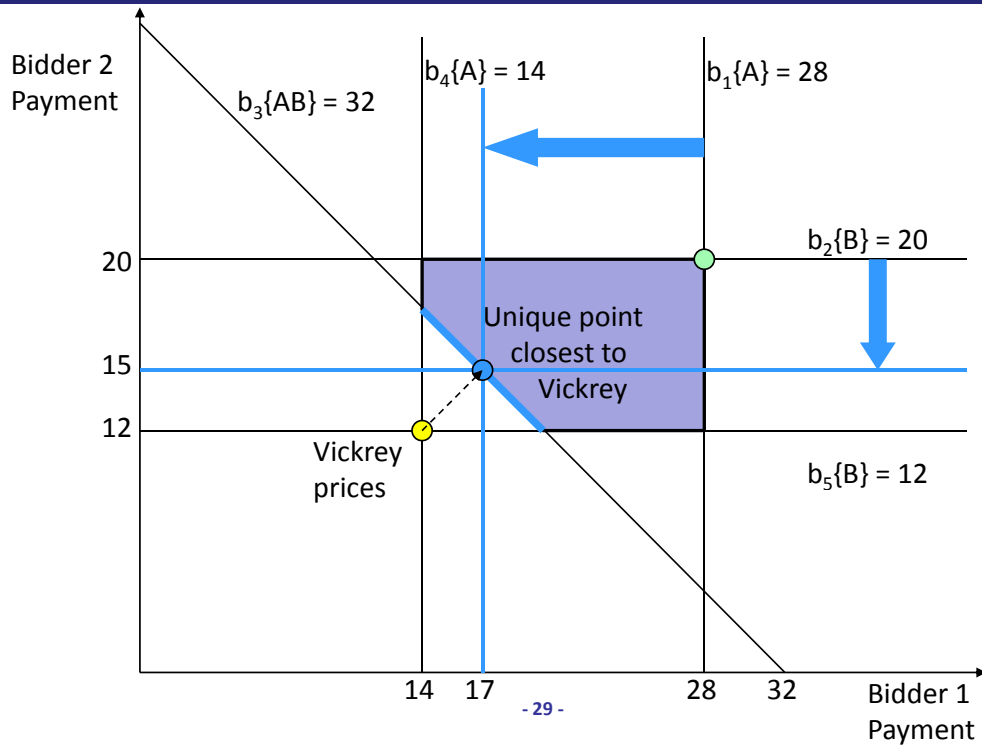
Vickrey prices: How much can each winner's bid be reduced holding others fixed?



Bidder-optimal core prices: Jointly reduce winning bids as much as possible



Core point closest to Vickrey prices



Why core pricing?

- Truthful bidding nearly optimal
 - Simplifies bidding
 - Improves efficiency
- Same as Vickrey if Vickrey in core (substitutes)
- Avoids Vickrey problems with complements
 - Prices that are too low
- Minimizes incentive to distort bids

Break

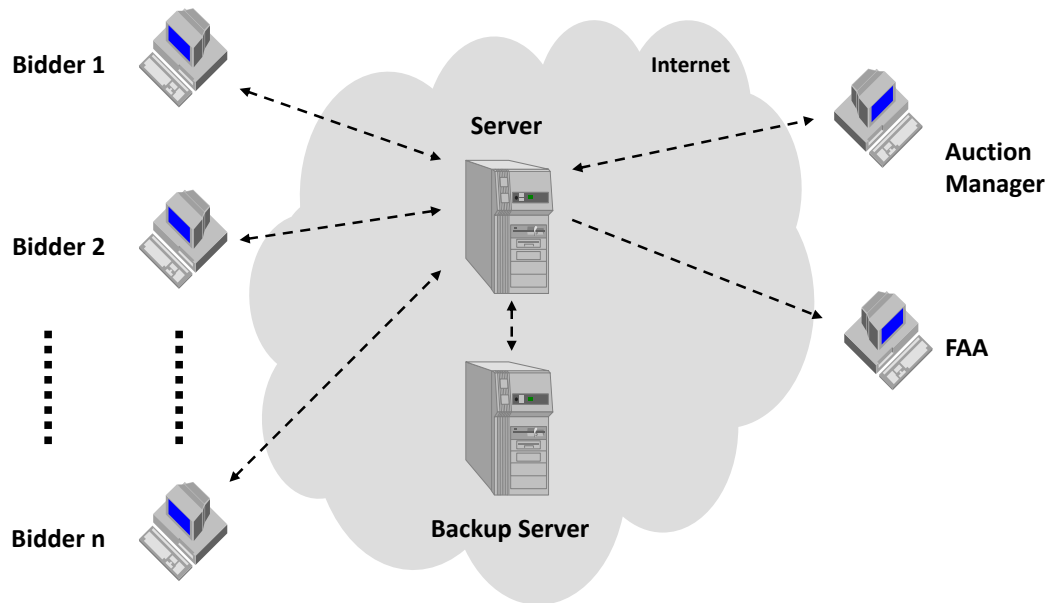
Ends at 11 am

Question and Answer forms available at the back

The Auction Software System

Phil Ashcroft, Power Auctions LLC

Physical auction arrangements



- 33 -

IT and backup requirements for participation



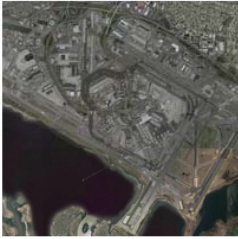

- **Computer requirements**
 - Computer with a 1.2 GHz processor or higher (Pentium processor recommended)
 - Windows Vista or XP operating system
 - Internet Explorer 6 or 7, or Mozilla Firefox 3.0
 - Access to the internet
 - XGA (1024x768) or higher resolution monitor
- **Recommended backup facilities**
 - Secondary means to access the internet, such as ADSL
 - More than one individual (up to three) authorized to bid for your company (three recommended)

- 34 -

New York Slot Auctions - Microsoft Internet Explorer

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New York Slot Auctions January 2009

Welcome to the auction website operated by the Auction Manager for the New York Slot Auctions. Auctions are being held for slots at New York's three main airports: LaGuardia (LGA), John F. Kennedy (JFK), and Newark-Liberty International (EWR). Each auction is accessed separately using one of the links provided below. If no link is available for a particular Auction, that auction is not currently running. For further details about the auctions, please view the [New York Slot Auction Informational Website](#).

[Click here to access the LGA Auction](#)

[Click here to access the JFK Auction](#)


[Click here to access the EWR Auction](#)

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New York Slot Auctions January 2009 - JFK

12 January 2009, 08:56:11 am ET

The Bid Submission Period will start 12 January 2009 at 9:00:00 am ET.

Please log in.

Username:


Password:

Done Internet

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New York Slot Auctions

January 2009 - JFK

12 January 2009, 08:57:12 am ET

The Bid Submission Period will start 12 January 2009 at 9:00:00 am ET.

Please log in.

Username:


Password:

Internet

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New York Slot Auctions

January 2009 - JFK

12 January 2009, 08:57:56 am ET

Authorized Individual John Smith of ABC Airlines is logged in.

The Bid Submission Period will start 12 January 2009 at 9:00:00 am ET.

Slot Info

The following table contains information about each of the Slots for John F. Kennedy International (JFK).

Slot ID	Slot Start Time	Slot End Time	Supply	Reserve Price	Slot Type
K0600	06:00	06:30	3	\$ 100	Non-Peak
K0630	06:30	07:00	1	\$ 100	Non-Peak
K0700	07:00	07:30	0	\$ 10,000	Peak
K0730	07:30	08:00	2	\$ 10,000	Peak
K0800	08:00	08:30	2	\$ 10,000	Peak
K0830	08:30	09:00	0	\$ 10,000	Peak
K0900	09:00	09:30	0	\$ 10,000	Peak
K0930	09:30	10:00	2	\$ 10,000	Peak
K1000	10:00	10:30	1	\$ 100	Non-Peak
K1030	10:30	11:00	1	\$ 100	Non-Peak
K1100	11:00	11:30	0	\$ 100	Non-Peak
K1130	11:30	12:00	2	\$ 100	Non-Peak
K1200	12:00	12:30	1	\$ 100	Non-Peak
K1230	12:30	13:00	0	\$ 100	Non-Peak
K1300	13:00	13:30	1	\$ 100	Non-Peak


Internet

New York Slot Auctions - Edit Bid - Microsoft Internet Explorer

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New York Slot Auctions

January 2009 - JFK

12 January 2009, 9:19:07 am ET
Logout [X]

Authorized Individual John Smith of ABC Airlines is logged in.

Bid Submission Period will end in less than **7 hours and 41 minutes**.

Edit Bid

Successfully added your Bid. [Price: \$ 60,000, Total Quantity: 4]

The following table shows all Bids currently in your Total Bid.
 Click **[+]** Add Bid to add a new Bid, **Edit** to change an existing Bid, or **[X]** to delete a Bid from your Total Bid.
 The Total Bid shown below does not match the Upload File since you have made changes.

Bid ID	Bid Amount	Slot ID																																					
		K 06 00	K 06 30	K 07 00	K 07 30	K 08 00	K 08 30	K 09 00	K 09 30	K 10 00	K 10 30	K 11 00	K 11 30	K 12 00	K 12 30	K 13 00	K 13 30	K 14 00	K 14 30	K 15 00	K 15 30	K 16 00	K 16 30		K 17 00	K 17 30	K 18 00	K 18 30	K 19 00	K 19 30	K 20 00	K 20 30	K 21 00	K 21 30	K 22 00	K 22 30			
<input checked="" type="checkbox"/> ABC-000001	\$ 100,000	3		2																																			<input type="button" value="Edit"/>
<input checked="" type="checkbox"/> ABC-000002	\$ 30,000	2		1																																			<input type="button" value="Edit"/>
<input checked="" type="checkbox"/> ABC-000003	\$ 70,000		1	1	1																																	<input type="button" value="Edit"/>	
<input checked="" type="checkbox"/> ABC-000004	\$ 60,000				2	2																																<input type="button" value="Edit"/>	

Internet

New York Slot Auctions - Bidding History - Microsoft Internet Explorer

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Address

Back Forward Stop Home Search Favorites Refresh Print Mail Stop



New York Slot Auctions

January 2009 - JFK

12 January 2009, 9:19:26 am ET
Logout [X]

Authorized Individual John Smith of ABC Airlines is logged in.

Bid Submission Period will end in less than **7 hours and 41 minutes**.

Bidding History for ABC Airlines

The table below lists the changes that you have made to your Total Bid, with the most recent change highlighted in yellow. Note that only the last Total Bid received will be considered. Please use the Confirmation Screen to verify that the Total Bid in the system is correct.

Time	Change to Total Bid	User	# of Bids in Total Bid	# of Errors	# of Warnings
9:18:57 am	Added Bid ID: ABC-000004 [Price: \$ 60,000, Total Quantity: 4]	John Smith	4	--	--
9:10:48 am	Uploaded "ABC Airlines Total Bid JFK.csv" (ABC-000001 to ABC-000003)	John Smith	3	--	--

Internet

Summary

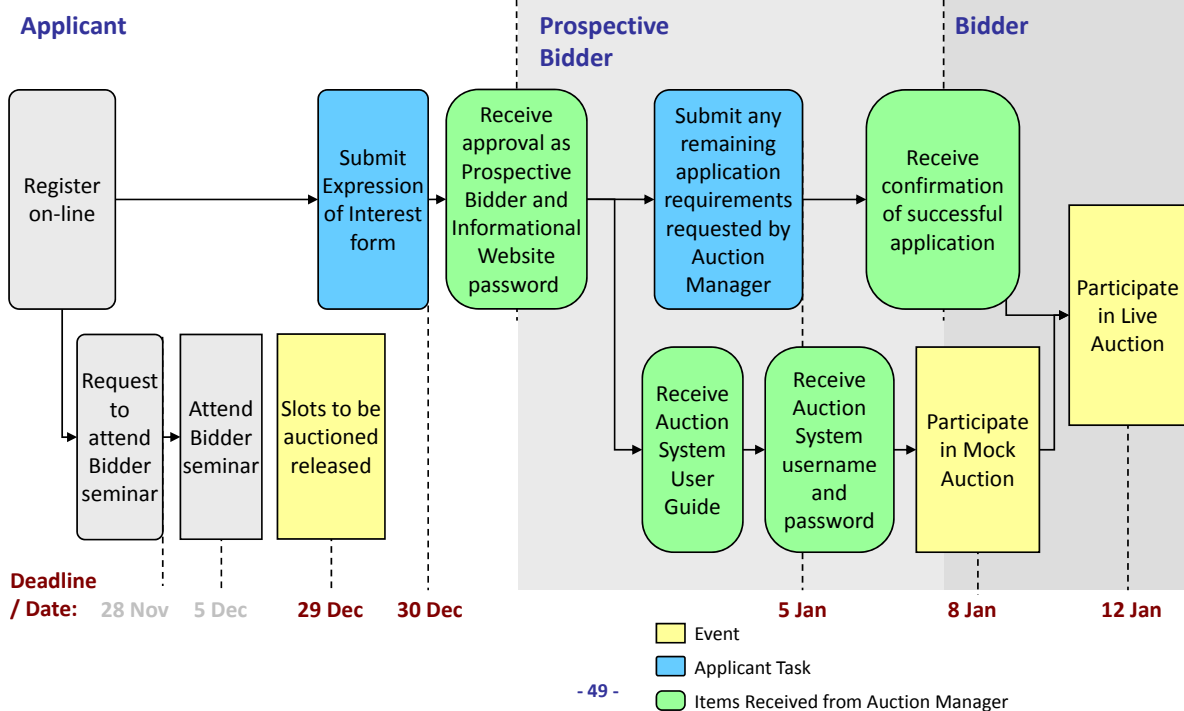
- Auction software secure and simple to use, and requires only a basic PC with internet access
- User Guide will be issued to all qualified bidders
- Qualified bidders will be able to practice bidding and test their equipment during the mock auction on 8 January 2009

- 47 -

Pre- and Post-Auction Process

Lawrence Ausubel, Power Auctions LLC

Pre-auction activities



- 49 -

Submission of Expression of Interest

- The Expression of Interest form will be available on the Slot Auction Informational Website (<https://www.slotauction.com>)
- Name between 1 and 3 Authorized Individuals who are authorized to submit bids for the company (naming 3 is recommended)
- The first individual will also serve as the Principal Point of Contact
- The form can be completed online (this is recommended), but a signed and notarized form must be submitted to the Auction Manager
- Submitted form must be accompanied by:
 - a copy of the applicant's air carrier certificate and documentation that the applicant has the economic authority for scheduled service (domestic carrier)
 - documentation that the applicant has the economic authority for scheduled service (foreign carrier).
- Must be signed by an authorized officer of the company and notarized
- Must be received by Auction Manager by **30 December 2008**

- 50 -

Communication among bidders

- To help ensure the competitiveness of the auction process, applicants in the same Auction are prohibited from communicating with each other directly or indirectly about bids, bidding strategies, or settlements
- This prohibition begins at the filing deadline for the Expression of Interest form and ends at the end of the Bid Submission Period for the relevant Auction
- Applicants are advised that this prohibition applies to all bidders, even those that may be related

- 51 -

Example of communication limit

- Example: If a large airline and its regional carrier wish to communicate with each other about bidding strategy after the filing deadline for the Expression of Interest form, then they should file a single application under one carrier's name, transferring slot leases won to the other carrier as needed

- 52 -

Other antitrust considerations

- Parties are also reminded that, regardless of their compliance with the Auction Rules, they remain subject to antitrust laws, which are designed to prevent anticompetitive behavior in the marketplace. Compliance with the Auction Rules will not insulate a party from the antitrust laws. For instance, a violation of the antitrust laws could arise out of actions taking place before or after the filing deadline for the Expression of Interest form or by a party that does not file an Expression of Interest form.

- 53 -

Approval of applications

- If the Expression of Interest and supporting documentation appear to fulfill all of the requirements to participate in an auction, the Principal Point of Contact will receive an email confirmation from the Auction Manager indicating that it has been approved as a Prospective Bidder
- These confirmations expected no later than 1 January 2009
- Final approval of applicants as Bidders will be made by FAA
- If approved by FAA, the Principal Point of Contact will receive a second email from the Auction Manager indicating that it has been approved as a Bidder
- These confirmations expected no later than 5 January 2009

- 54 -

Prospective Bidders and Bidders

- Receive, via email, usernames and passwords for the password-protected area of the Informational Website
 - Gives access to key auction documents including the Auction System User Guide
- Receive, via FedEx (signature required), usernames and passwords for the Auction System for the Authorized Individuals
 - Allows access to the Auction System for the mock auction and live auction

- 55 -

Mock auctions

- Mock Auctions (training session) are currently scheduled for [Thursday, 8 January 2009, 10:00 am – 3:00 pm ET](#)
- Participation in the Mock Auctions will occur remotely over the Internet, from the bidders' respective offices
- Recommend that bidders use the PC and connection that they intend to use for the live auction
- All submissions subject to the constraints of the Auction Rules
- Can submit bid packages that intend to submit for live auction or test packages
- No results of the Mock Auctions will be published
- Auction Manager will provide support (telephone and messaging facility of auction system) during the Mock Auctions

- 56 -

Live auctions

- Live Auctions are currently scheduled for all three airports on [Monday, 12 January 2009, 9:00 am – 5:00 pm ET](#)
- Participation in the Auctions will occur remotely over the Internet, from the bidders' respective offices
- Bidders should establish protocol that a single Authorized Individual will be submitting bids; and that the second and third Authorized Individuals are available as backups
- All submissions subject to the constraints of the Auction Rules
- Auction Manager will provide support (telephone and messaging facility of auction system) during the Live Auctions

- 57 -

Post-auction process

- Within two business days after the Auction Date, the Auction Manager will provide the FAA with a complete list of the Bid Submissions of all Bidders, as well as a list of the Winning Bidders, their Winning Packages and their Winning Payments
- Within five business days after the Auction Date, the FAA expects to publish a list of Winning Bidders, their Winning Packages and their Winning Payments
- Within five business days after the Auction Date, the FAA will insert the Winning Package and the Winning Payment into the Slot Lease for each Winning Bidder and transmit the Slot Lease to the Principal Point of Contact by email

- 58 -

Post-auction process

- Each Winning Bidder has the unconditional obligation to execute the Slot Lease and to return the executed Slot Lease to the FAA so that it is received within 30 calendar days after the date of the FAA's email of the Slot Lease
- Payment in full must also be provided to the FAA by wire transfer within 30 calendar days of the date of the FAA's email
- If the above steps are completed, the FAA will countersign the Slot Lease and will email a countersigned copy to the Winning Bidder within 35 calendar days of the date of the FAA's email

- 59 -

If a default occurs

- Bids submitted in the Slot Auctions are binding offers on behalf of the respective Bidder
- Any Winning Bidder who fails to pay the amount of its Winning Payment or to execute its Slot Lease within the designated times will be deemed to be in default
- Any Slots subject to default or which otherwise fail to be allocated in the Auctions (e.g. fail to meet the reserve price) may be re-auctioned at a later date

- 60 -

If a default occurs

- A defaulting Bidder is liable for:
 - A Deficiency Payment that equals the difference between the Winning Payment and the amount of money that is received when the Slots in its Winning Package are re-auctioned or otherwise leased, if positive, and equals zero otherwise; and
 - The cost to the FAA of re-auctioning these Slots.
- Furthermore, a defaulting Bidder will automatically lose any interest in its Winning Package and will be prohibited from participating in any subsequent slot auctions for 25 months from the Auction Date

- 61 -

Key dates

Mon 15 Dec 2008	Filing window for Expression of Interest forms is open
Mon 29 Dec 2008	Information about available Slots released
Tue 30 Dec 2008	Deadline for delivery of Expression of Interest forms
Thurs 1 Jan 2009	Approvals as Prospective Bidders
Mon 5 Jan 2009	Approvals as Bidders
Thurs 8 Jan 2009	Mock Auctions
Mon 12 Jan 2009	Live Auctions

- 62 -

Questions and Answers

FAA and Power Auctions LLC

Closing

Next steps

- Read the Bidder Information Package, Final Rules, and Lease Agreement
- If you wish to participate, complete and send Expression of Interest form by 30 Dec 2008 (with accompaniments)
- If you intend to submit many bids in the auction, consider creating an upload file in Excel (or equivalent)
- Participate in mock auctions on Thursday, 8 Jan 2009
- You may contact the Auction Manager if you have any questions

- 65 -

Contact information

Auction Manager

Power Auctions LLC
1000 Potomac St. NW Suite 260
Washington, DC 20007-3501

Phone: 202-342-0909

Fax: 202-379-9054

E-mail: slots@powerauctions.com

Web: www.slotauction.com

FAA

Jeffrey Wharff
Office of Aviation Policy & Plans
Federal Aviation Administration 800
Independence Avenue SW
Washington, DC 20591

Phone: 202-267-3274

Fax: 202-267-3278

E-mail: Jeffrey.Wharff@faa.gov

Web: www.faa.gov

- 66 -

2009 New York Slot Auctions Bidder Seminar

Thank you



Background

For the purpose of setting the reserve prices peak and non-peak slots are identified

Slot Time	JFK	EW R	LGA
6:00 – 6:30	N	N	N
6:30 – 7:00	N	N	N
7:00 – 7:30	P	P	P
7:30 – 8:00	P	P	P
8:00 – 8:30	P	P	P
8:30 – 9:00	P	P	P
9:00 – 9:30	P	N	P
9:30 – 10:00	P	N	P
10:00 – 10:30	N	N	P
10:30 – 11:00	N	N	P
11:00 – 11:30	N	N	P
11:30 – 12:00	N	N	P

Slot Time	JFK	EW R	LGA
12:00 – 12:30	P	P	P
12:30 – 13:00	P	P	P
13:00 – 13:30	P	P	P
13:30 – 14:00	P	P	P
14:00 – 14:30	P	P	P
14:30 – 15:00	P	P	P
15:00 – 15:30	P	P	P
15:30 – 16:00	P	P	P
16:00 – 16:30	P	P	P
16:30 – 17:00	P	P	P
17:00 – 17:30	P	P	P
17:30 – 18:00	P	P	P

Slot Time	JFK	EW R	LGA
18:00 – 18:30	P	P	P
18:30 – 19:00	P	P	P
19:00 – 19:30	P	P	P
19:30 – 20:00	P	P	P
20:00 – 20:30	P	P	P
20:30 – 21:00	P	P	P
21:00 – 21:30	P	P	P
21:30 – 22:00	P	P	P
22:00 – 22:30	N	N	-
22:30 – 23:00	N	N	-

Non-Peak	N
Peak	P
N/A	-