The FCC Spectrum Incentive Auction: Lessons for the Future

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Highlighting work of the NCI Optimization Team:
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Views expressed are my own and do not reflect the views of the optimization team or of the FCC
For major new endeavors: Get the best people and be willing to take the time and effort to get it right!

Remarkable collection of talent:

• The FCC Incentive Auction Task Force (IATF) led by Gary Epstein (assisted first by Howard Symons and then by Jean Kiddoo)
  • Major internal players: Office of Engineering Technology (OET), Wireless, Media, International, Legal, IT
  • External stakeholders got to be heard through multiple outreach efforts
  • The management team of Melissa Dunford and Sasha Javid:
    • Software had to run perfectly out of the box
    • Multiple tutorials for the stakeholders
    • International negotiations that led to a single North-American band plan
• Consultants: Auctionomics, Power Auctions, NCI
• Evan Kwerel... this auction would not have happened without him!
  • Worked with John Williams to determine how to treat stations as substitutes
  • Worked to get the legislation that authorized the auction
  • Worked to get a structure in place at the FCC
  • Continuous involvement in every aspect of auction design
Role of optimization/analysis team:

• Research and analysis from the beginning through the end
  • Evaluation of auction designs and clearing target potential
  • Investigated possible auction outcomes based on estimates of participation
  • Designed post-auction TV transition plan

• Worked side-by-side with policy-makers to craft rules and software that benefited all stakeholders across a broad range of issues

• Created the software to solve “impossible” problems that were critical components of the auction
  • Identifying stations not needed in the auction
  • Determining the Clearing Target for each stage
  • Determining the Final Channel Assignment

• Worked with IATF to create a phased transition plan
Lessons Learned: Market Design was robust over multiple market changes

Many events occurred in the time between the authorization legislation

- AWS-3 Auction
- Evolution of Micro-cell technology
- FCC announced the plans to offer spectrum in 3.5 GHz and above
- AT&T awarded First Net contract (20 MHz of spectrum)
- Large-scale M&A activity

Even with all of these unpredictable events:

Incentive auction transformed 84 MHz of spectrum to its best use with all trades being voluntary

- Amount of spectrum to be transformed was determined by the market rather than the FCC
- TV broadcasting will not have changed significantly... Channel Sharing was instrumental in allowing this transformation
Lessons Learned: Get the right team and challenge them to do the right thing!

COMMUNICATION
• The FCC continuously listened to stakeholders and then performed analysis to determine the consequences to these stakeholders of any regulation and auction rule.
• Analysts are most useful when regularly meeting with stakeholders. Everyone had the opportunity to provide their concerns to the IATF.

COURAGE
• This auction provided significant mathematical challenges. The FCC could have avoided the “hard” math. Instead, management chose ambitious goals and expected everyone to “figure it out”.

TRUST and RESPECT
• Leads to better collaboration to make the right policy decisions.
• When there is trust, a mathematician can say to a lawyer “could this language in the PN imply this?” or a policy-maker can ask an engineer “have we considered these protections?”
Going Forward

• Still need to have a successful transition... Again: trust, flexibility, and oversight will be critical

• Could Europe do the same... i.e. a EURO auction that has same band plan everywhere and repacks simultaneously?

• Other uses for this auction design?
  • Help the transition of other U.S. government spectrum by having the auction pay for modernization and transformation (e.g. Aviation)
  • How should one auction overlay licenses with dynamic re-allocation when needed (e.g. Military gets use when emergency but otherwise used commercially)

• How does one evaluate an auction’s success?
  • Value to the US economy of spectrum availability
  • Auction proved that there are mechanisms available to move spectrum to its highest and best use.