

# Incentive Auctions and Spectrum Policy

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Before the United States House Committee on Energy and Commerce  
15 July 2011

Mr. Chairman and members of the House Committee on Energy and Commerce, I am honored to appear before you today. My remarks are about spectrum policy, especially a much needed enhancement, incentive auctions. Incentive auctions would allow the Federal Communications Commission (FCC) to conduct two-sided auctions—auctions that simultaneously free-up encumbered spectrum and put it to its best use.

We are in the midst of a communications revolution. Spectrum is an essential input in this revolution. The success of the revolution hinges on making the best use of this essential resource. From 1994 until today, the FCC's spectrum auctions have done a superb job of putting the spectrum to its best use. However, it is becoming increasingly difficult for the FCC to find suitable spectrum to satisfy demand.

The best spectrum for mobile broadband has already been allocated, much of it many decades ago, for over-the-air TV broadcast. In recent decades, the value of over-the-air TV broadcast has declined as more and more viewers receive their TV signal via cable and satellite. I personally have not seen over-the-air TV in more than 25 years. Most of my students at the University of Maryland have never seen broadcast TV in their lifetimes.

At the same time, there has been explosive growth in the use of smartphones and tablets. These devices, such as my Droid Charge phone, use the latest communications technologies and software to do amazing things. My phone runs on Verizon's 4G LTE network. It achieves data rates of about 20 megabits per second download and 6 megabits per seconds upload. This is about twice as fast as what most Americans get from their fixed broadband connections according to the [OECD Broadband Portal](#). These devices, which are used nearly 24x7 by my students, are fueled by spectrum. This is the future. And it is available in the US now, thanks to the FCC's successful auction program and Congress' setting a firm deadline for the DTV transition, which freed up the necessary spectrum to let the revolution begin.

This shift in demand away from over-the-air TV and toward mobile broadband has created a huge disparity in value. Spectrum used for mobile broadband generates much more economic value than spectrum used for over-the-air TV—hence, the need to reallocate much of the TV spectrum from its current low-value use to the high-value use of mobile broadband.

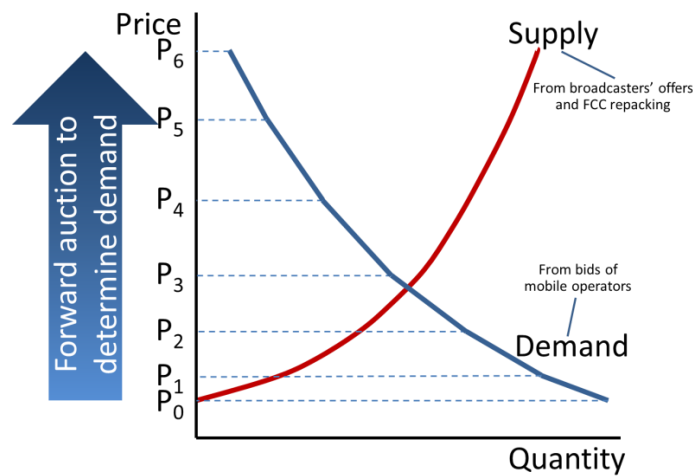
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<sup>1</sup> My specialty is the design of complex auction markets. Since 1993, I have contributed extensively to the development of spectrum auctions. I have advised ten governments on spectrum auctions, including the United States. I am currently advising the United Kingdom, Canada, and Singapore. I have advised 35 bidders in major spectrum auctions around the world. I have written dozens of practical papers on spectrum auctions. This research is available at [www.cramton.umd.edu/papers/spectrum](http://www.cramton.umd.edu/papers/spectrum).

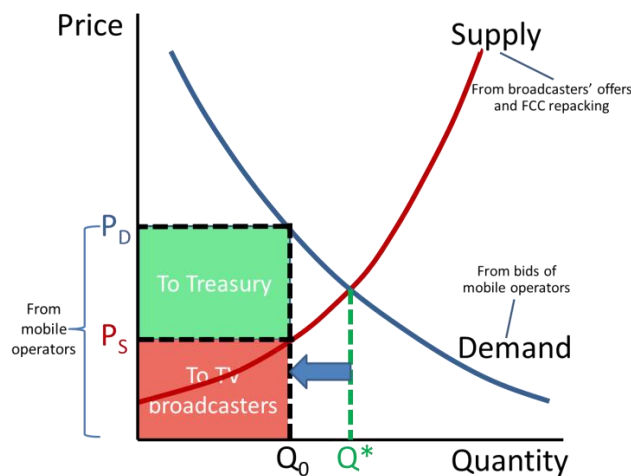
The FCC understands this need and has proposed incentive auctions to accomplish this exchange of spectrum usage rights from TV to broadband. There is [consensus among economists](#) and other experts that incentive auctions are the best approach.

Unlike the FCC's prior auctions, the incentive auction is a two-sided auction in which TV broadcasters *voluntarily* offer to sell some or all of their spectrum rights and the mobile operators bid to buy large contiguous blocks of spectrum that the latest communications technologies require. The FCC plays an essential role in the process, repacking the remaining broadcasters to free up as much spectrum as possible and then clearing the market at a quantity that maximizes social welfare and guarantees positive revenue for the Treasury.

The simple economics of the incentive auction can be explained with the most basic tool of economics: supply and demand. The supply of spectrum comes from the broadcasters' offers to relinquish spectrum and the demand comes from the mobile operators' bids for blocks of spectrum, as shown below.



Once offers and bids are received, the FCC can clear the market at a quantity that generates maximum economic value.



Although this may appear simple, the incentive auction is complex in its details and requires a great deal of study by experts to get the important details right. The incentive auction is a new and essential innovation. Its development will have a positive transformative impact both in the US and worldwide, similar to the impact of the FCC's initial spectrum auctions in 1994.

With this background let me summarize my main points.

The incentive auction is an essential innovation. It will provide broad benefits: TV broadcasters, mobile operators, public safety, taxpayers, and most importantly the vast majority of Americans that are participating in this communications revolution. The incentive auction will create jobs and stimulate long-term growth in the US economy.

The incentive auction is complex. Its design is best left to experts. The FCC has an outstanding record of innovation in the auction arena and requires only limited guidance from Congress on the basic objectives and principles.<sup>2</sup> It would be a mistake for Congress to prevent the FCC from adopting the best auction design by mandating auction details and other restrictions in the enabling legislation. There are such mistakes in the draft legislation. Here are a few examples. The current draft specifies:

- a pricing rule for broadcasters that is far from best;
- mandating the treatment of unlicensed spectrum;
- a section on reserve prices that is inconsistent with an effective incentive auction; and
- a sequencing of offers from broadcasters, bids from mobile operators, and repacking by the FCC that appears to be inconsistent with how the incentive auction should be conducted.

All these problematic mandates are easily fixed by omitting the auction details and keeping the focus on basic principles.

Three good features of the draft legislation are worth noting.

- The draft does not impose restrictions on which broadcasters can participate in the auction. Restrictions of this form would weaken competition in the reverse auction among broadcasters.
- The draft avoids restrictions on the revenue division between the Treasury and the broadcasters. The revenue split cannot be established before the auction but only in the last step of the auction, once the supply and demand curves for spectrum have been established in

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<sup>2</sup> Among all US agencies, the FCC gets the highest grade on auction design and implementation. At the other extreme is CMS, which gets the lowest grade among all US agencies for its design and implementation of the Medicare auctions for durable medical equipment. The CMS auction program is certain to fail at considerable cost to taxpayers and Medicare beneficiaries if Congress does not act to replace the current CMS auction with an efficient auction. Unlike the FCC, CMS requires much more direction from Congress. CMS over the last ten years has so far only demonstrated an inability to design and conduct auctions. Specific recommendations to the administration and Congress were provided in a June 2011 [letter to President Obama](#) from 244 concerned auction experts, including four Nobel laureates in economics. A wealth of supporting documents on this matter is available at [www.cramton.umd.edu/papers/health-care](http://www.cramton.umd.edu/papers/health-care). Like incentive auctions, Medicare auctions are of great importance to this committee; like incentive auctions, Congressional action is required and the proper course is clear.

the auction. Both social gain and revenues are apt to be larger if the only revenue constraint is that the auction generate positive revenue.

- The draft does not impose an unrealistic timeline. There is much design and implementation work to be done by experts. This work together with the regulatory process will take about two years to complete. A faster schedule will prevent the FCC from identifying and implementing the best design. As a result, revenues and social welfare would be lost.

It is important to understand that not all constraints are bad. For example, restrictions that promote competition in the auction improve both revenues and efficiency.

Given the FCC's outstanding record in designing and implementing auctions, the legislation should provide the FCC with broad auction authority, focused on basic objectives and principles. To me, there are two key objectives: 1) transparency and 2) economic efficiency. What is needed is a statement of these objectives. Including specific details is apt to do more harm than good.

I urge Congress to adopt streamlined legislation for incentive auctions as soon as possible. Only then can the full benefits of the communications revolution be realized. The time to act is now. Then the FCC can accelerate its work on designing and implementing an innovative auction approach to put the radio spectrum to its best use.

## References

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[Letter from 244 economists](#) to President Obama, urging legislation that reforms CMS' auction program for durable medical equipment, 17 June 2011.