

# One Year Later: White Spaces and the Incentive Auction

White Spaces Alliance

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THE Brattle GROUP



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# Agenda

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## Current State of White Spaces

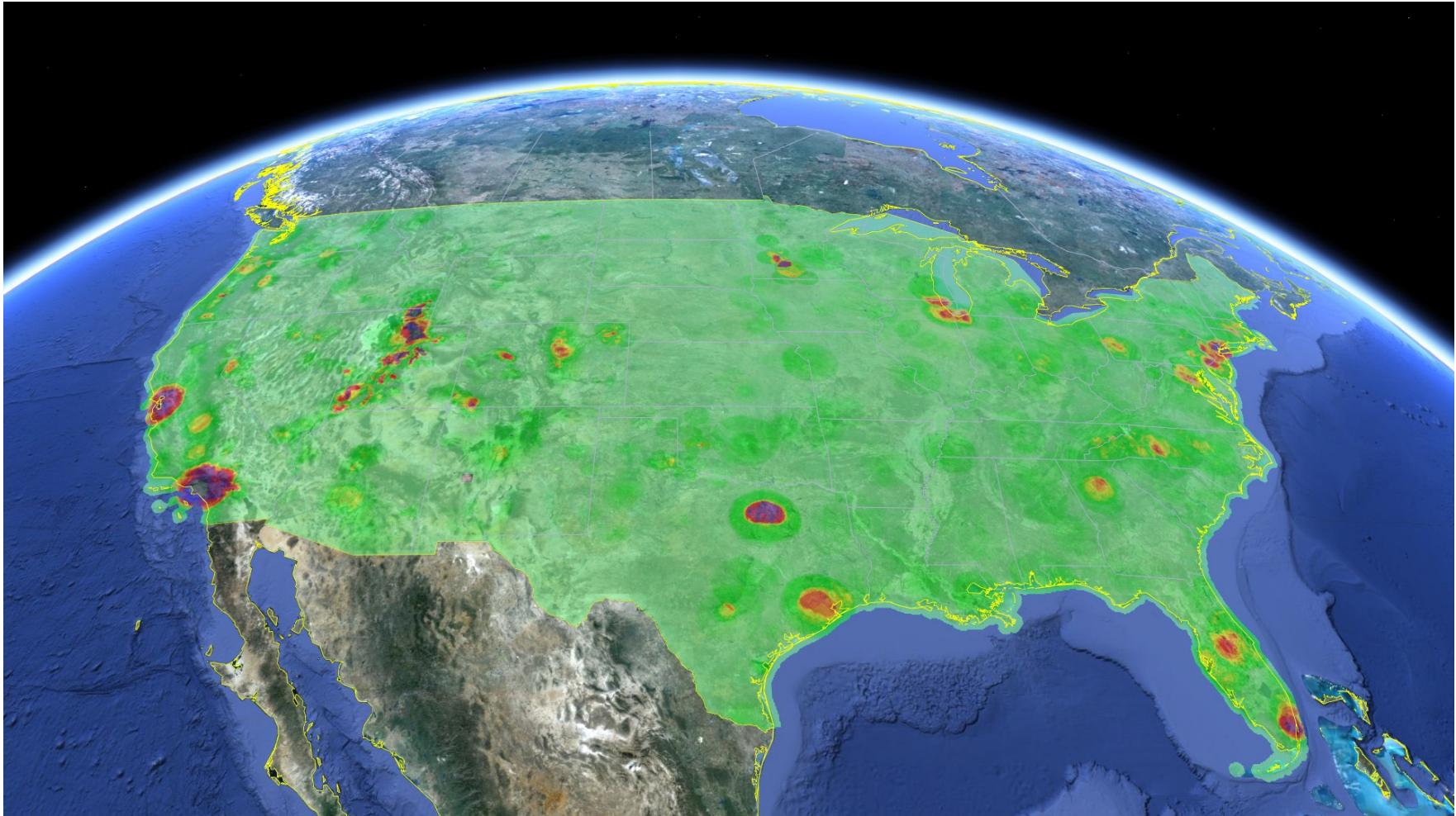
## TV Incentive Auction Background

- Key Determinants
- Participation
- Reverse Auction
- Forward Auction

## Implications for White Spaces

# Current State of White Spaces

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Source: Google

# The Incentive Auction

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**The incentive auction will:**

- Reduce frequencies available for UHF TV channels and white spaces
- Reduce the number of UHF broadcasters
- Increase the density of UHF broadcasters in most markets

# Auction Outcome: Key Determinants

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*What determines the number of broadcaster licenses bought in each market?*

## Market issues:

- Number of broadcasters in the a market;
- Canadian, Mexican and Land Mobile restrictions; and

## Broadcast bidder issues:

- *Broadcaster participation*;
- Payments to broadcasters; and

## Other Auction issues:

- *Carrier participation and spending*;
- *Band plan* (some plans are more flexible than others).

# Will Broadcasters Participate?

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## *Which Broadcasters Will Participate?*

- Expanding Opportunities for Broadcasters Coalition
  - Over 70 Stations (Class A, Small High Power)
  - Investors
- Stations Who Can Share
- Stations Who Can Accept VHF

## **Selling a License is Not the End**

- Less than 10% of U.S. Households Watch Over the Air
- Cable, Satellite, Over the Top Still Available

# **Will Broadcasters Participate?**

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## **Broadcasters Can**

- Not Bid, Receive New UHF Channel Assignment
- Bid to Sell Back License
- Bid to Sell Back UHF License for VHF License
- Share With Another Station, and Bid to Sell One License

## **To Participate, Broadcasters Need**

- Transparency on Auction Rules and Decisions
- Rules to Promote Fair Prices

# Will Carriers Participate?

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## Carriers Have Voiced Strong Interest

- FCC Must Structure Licenses to Have Value

## Who Might Participate?

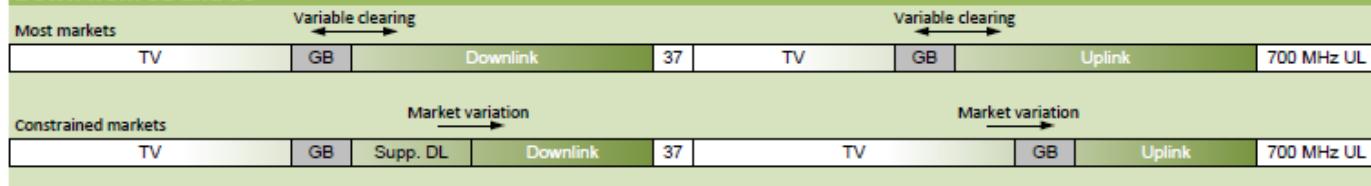
- Top 4: AT&T, Verizon, Sprint, T-Mo
- Regional: US Cellular, C Spire (Cellular South), Etc.
- New Entrants: Microsoft, Google, Qualcomm
- Investment Funds

# Proposed Plans as of May 4 Workshop

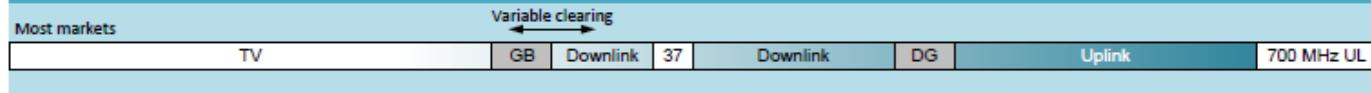
## LEARN Program 600 MHz Band Plan Workshop Illustrations

512	524	536	548	560	572	584	596	608	614	626	638	650	662	674	686	698	700 MHz UL														
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	700 MHz UL

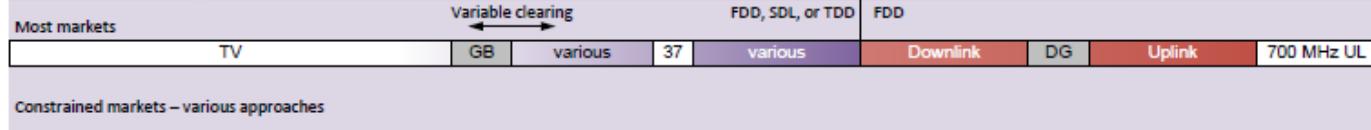
### Down from 51 and 36



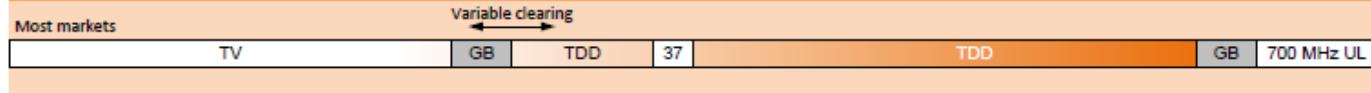
### Down from 51



### Down from 51 hybrid



### Down from 51 TDD



See resources at end of presentation for more info.

# Overview of Auction

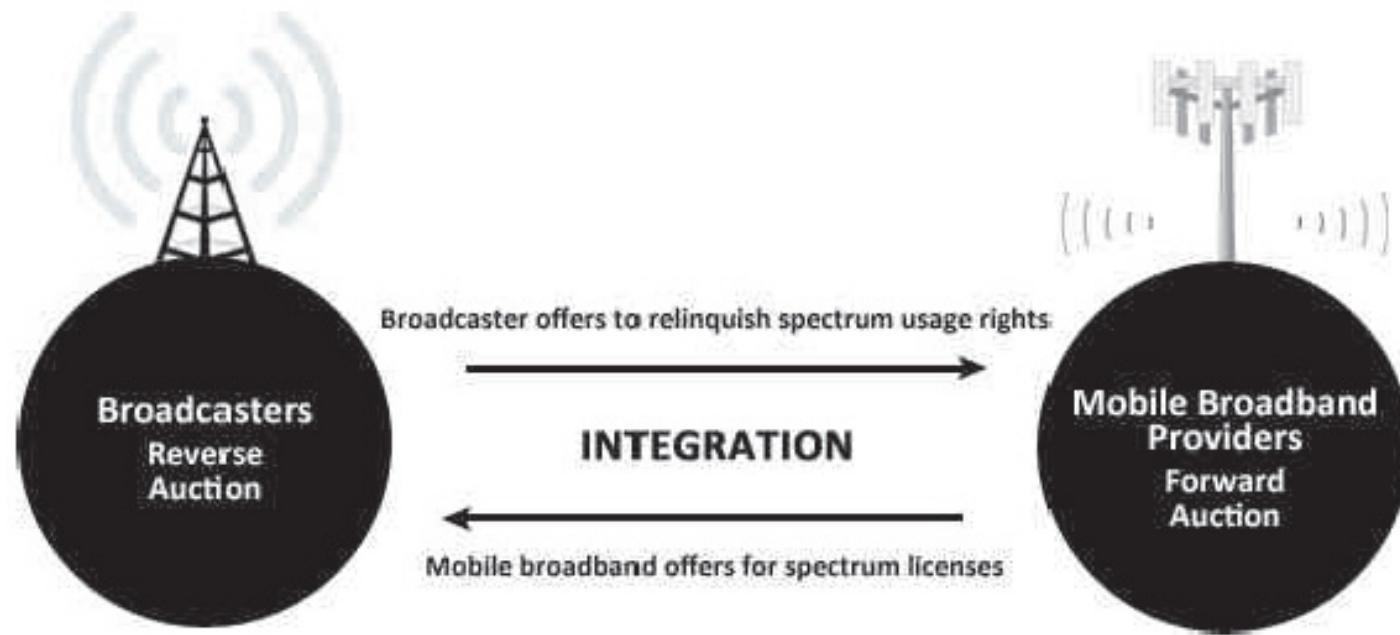
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## Goals of Middle Class Tax Relief Act (February 2012)

- Clear Up To 120 MHz of UHF Spectrum
  - Leave VHF and UHF Channel 30 and below (at least 108 MHz)
  - UHF channels cleared depends on Forward and Reverse bidding
  - May clear variable amount by market
    - FCC wants to clear a “consistent amount of spectrum in the vast majority of the country.” – Ruth Milkman, June 2013
- Allocate Nationwide Unlicensed Spectrum in Guardbands
- Auction several other bands: H Block, remaining AWS, etc.
- Use Receipts from All Auctions to Set Aside
  - \$7 billion for Public Safety
  - \$1.75 billion for broadcaster relocation
  - Additional money earmarked for other priorities
  - And, finally, deficit reduction

# Overview

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Source: FCC Staff Summary, January 2013.

# **Buying Spectrum: The Reverse Auction**

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**FCC will only accept broadcaster bids where they have to:**

- Markets that could be entirely repacked—at the cost of existing white spaces—will be repacked;

**Broadcasters whose bids are accepted will turn their current license over to the FCC.**

**Depending on their type of bid and outside arrangements, broadcasters may:**

- Move to a VHF channel;
- Share a channel with another broadcaster;
- Continue broadcasting in another media (cable-only, satellite);
- Stop broadcasting entirely.

# **Buying Spectrum: The Reverse Auction**

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**Participating in the auction will be voluntary; participating in repacking will not be.**

**All other broadcasters will remain on-the-air, at a new channel:**

- Most remaining broadcasters will have to move to lower channel;
- Revenues from the Forward Auction will pay for channel relocation.

**Which channels remain for broadcasters depends on:**

- Configuration of band plan;
- Total amount of spectrum freed for wireless broadband.

# Auction Outcome: Reverse Auction

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**Post auction White Space availability driven by Reverse Auction outcome.**

**Fewer MHz cleared means:**

- More spectrum for remaining broadcasters;
- And more remaining broadcasters.

**Net effect for white spaces varies by MHz cleared and market:**

- Large urban areas likely lose the least white space;
- Suburban areas will likely become more white space constrained;
- Rural areas will loose some white spaces, but still have many open channels.

# Selling Spectrum: The Forward Auction

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**Forward auction determines revenues to pay broadcasters:**

- After money for FirstNet, broadcaster relocation, and other priorities is set aside.

**More revenue means:**

- More broadcaster licenses can be bought out;
- More spectrum cleared.

**Carriers have voiced strong interest in participating.**

# Selling Spectrum: The Forward Auction

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**Prices paid by bidders (wireless carriers, etc.) will depend on:**

- General demand for spectrum;
- The markets they bid for.

**National average spectrum value is roughly \$1/MHz-pop:**

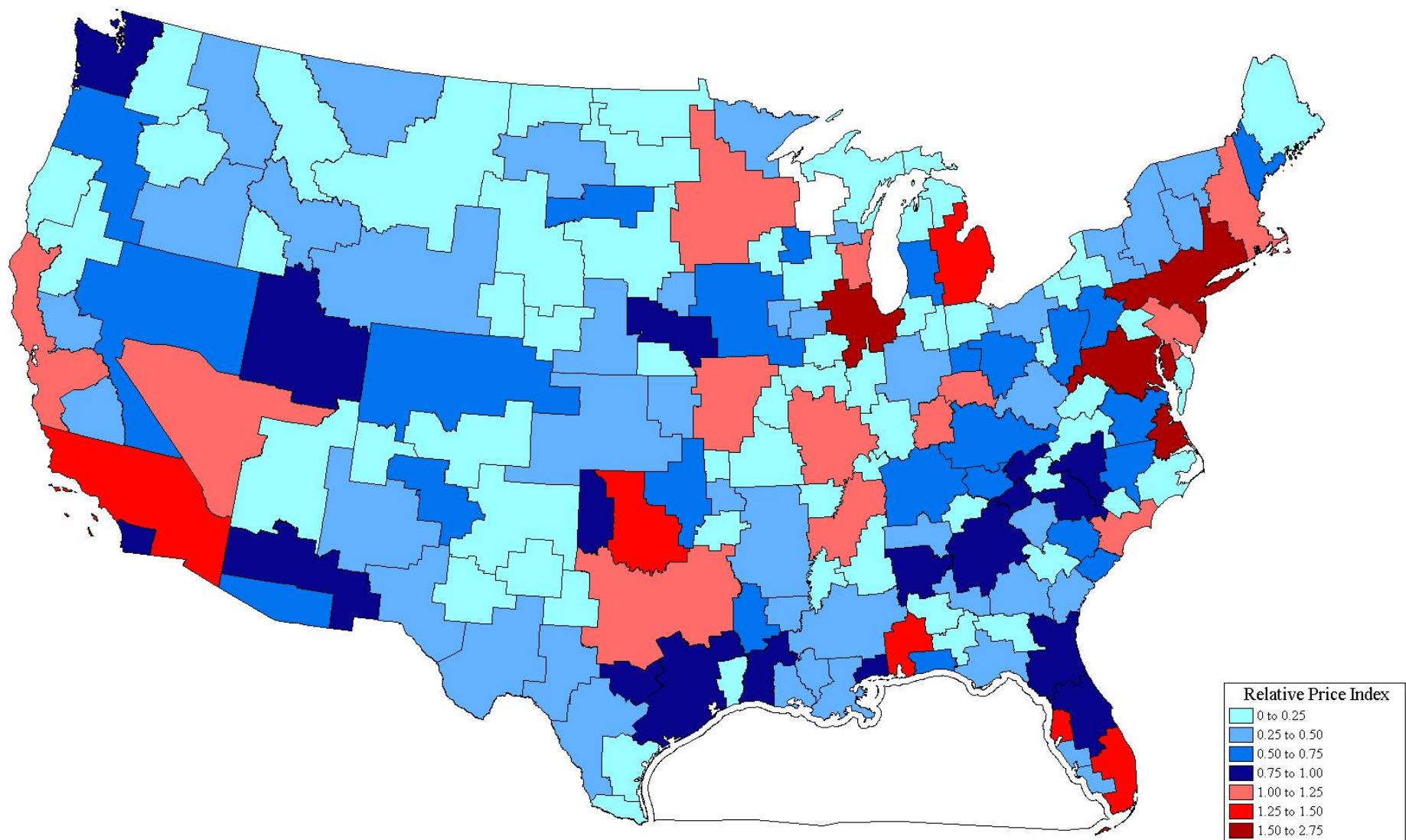
- Price varies substantially by market;
- Example from past auctions:
  - New York license sold for 2x the national average price;
  - Denver license sold for 71% the national average price.

# Selling Spectrum: The Forward Auction

Market Rank	Market Name	Weighted Index
1	New York, NY	2.01
2	Los Angeles, CA	1.07
3	Chicago, IL	3.54
4	Philadelphia, PA	2.21
5	Dallas, TX	0.89
6	San Francisco, CA	1.65
7	Boston, MA	1.90
8	Atlanta, GA	1.83
9	Washington, DC	2.28
10	Houston, TX	1.23
11	Detroit, MI	1.41
12	Phoenix, AZ	1.92
13	Seattle, WA	2.59
14	Tampa, FL	1.55
15	Minneapolis, MN	1.71
16	Denver, CO	0.71
17	Miami, FL	1.71
18	Cleveland-Akron, OH	0.85
19	Orlando, FL	1.74
20	Sacramento, CA	1.28
21	St. Louis, MO	1.51
22	Portland, OR	0.83
23	Pittsburgh, PA	1.05
24	Charlotte, NC	1.66
25	Indianapolis, IN	1.22
Nationwide		1.00

*Sources and notes:* The Brattle Group analysis of results from Auction 66 (AWS) and Auction 73 (700 MHz). See [wireless.fcc.gov/auctions/](http://wireless.fcc.gov/auctions/) for detailed data.

# Selling Spectrum: The Forward Auction



# Implication for White Space

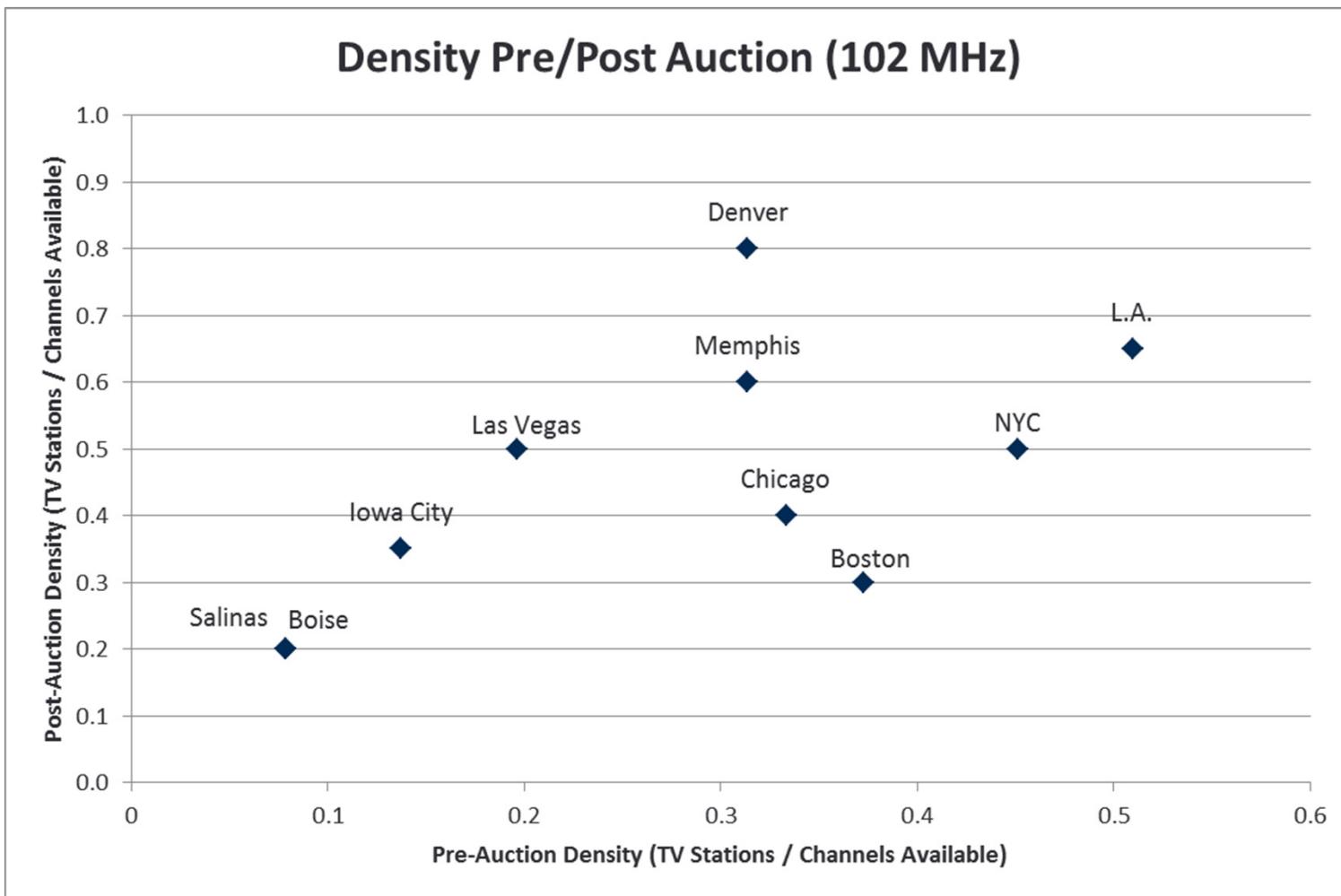
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## *Where will there be Spectrum?*

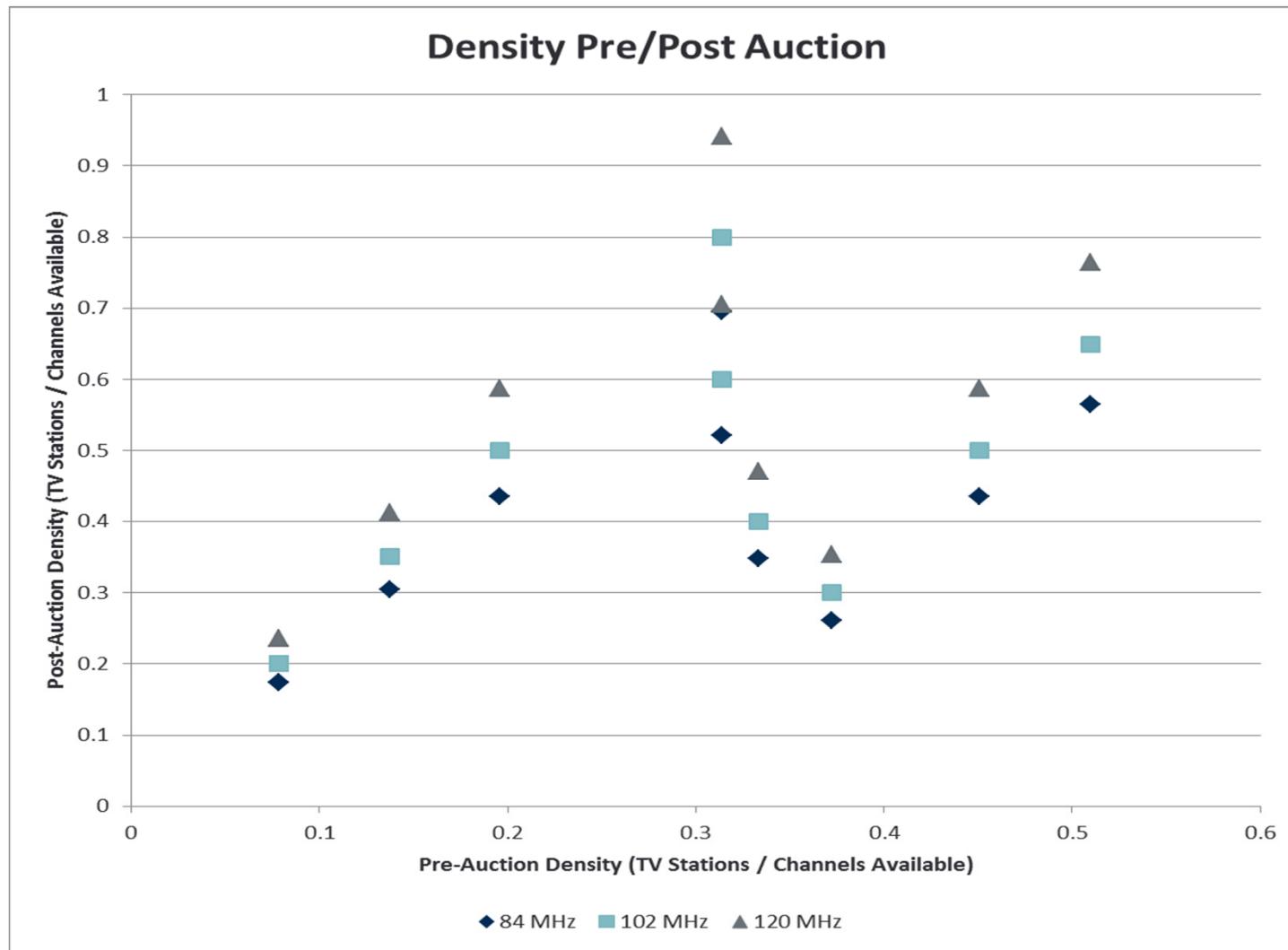
- Outside Top 25 – 40 Markets;
- Guard Bands:
  - Likely to be nationwide;
  - Technically unlicensed allocations, not white spaces;
- The more MHz cleared and auctioned, the fewer white spaces remain.

*With caveats, our initial analysis shows that mid to large, but not the largest, markets will see the biggest change in available whitespaces.*

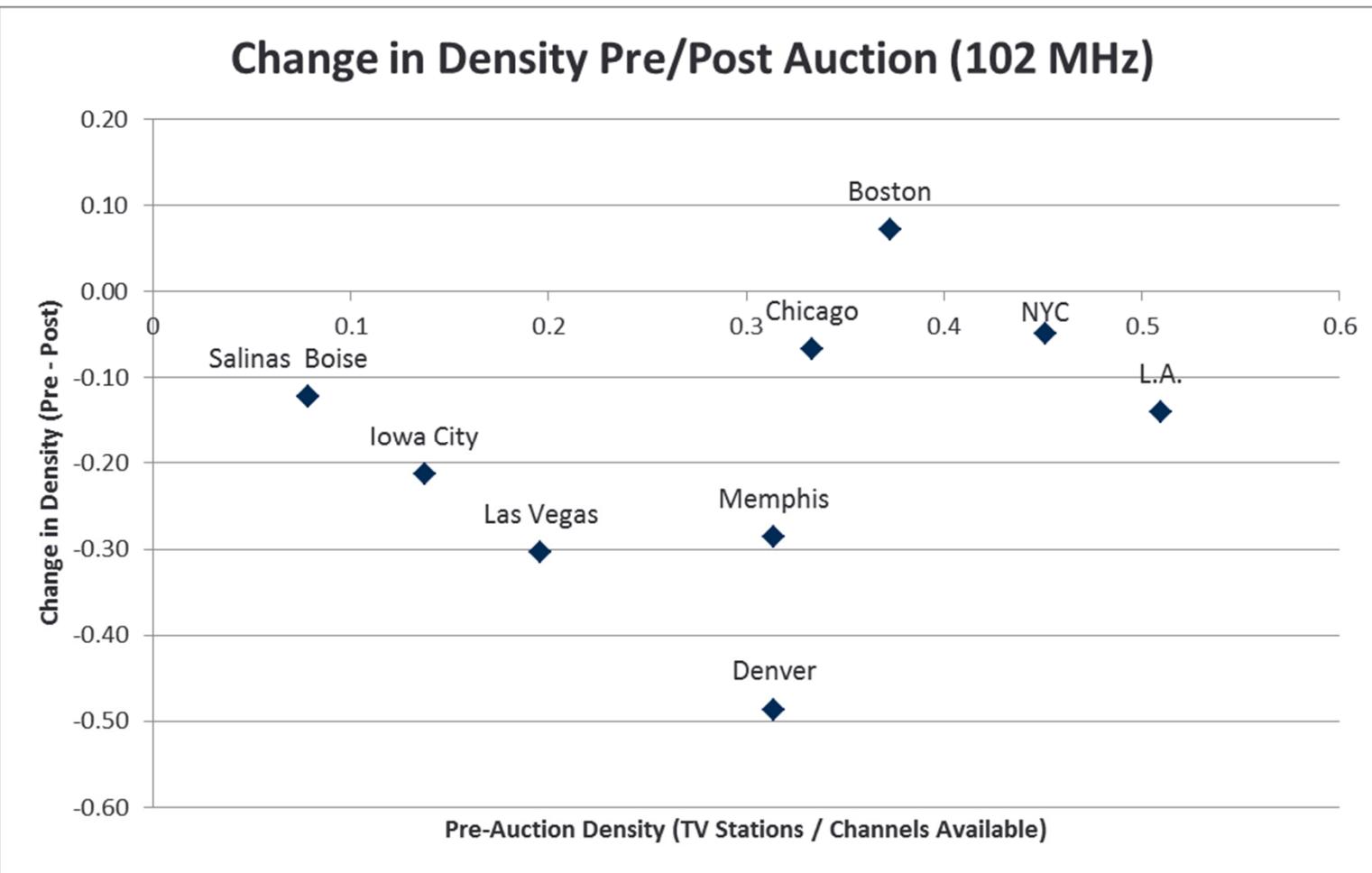
# Implications for White Space



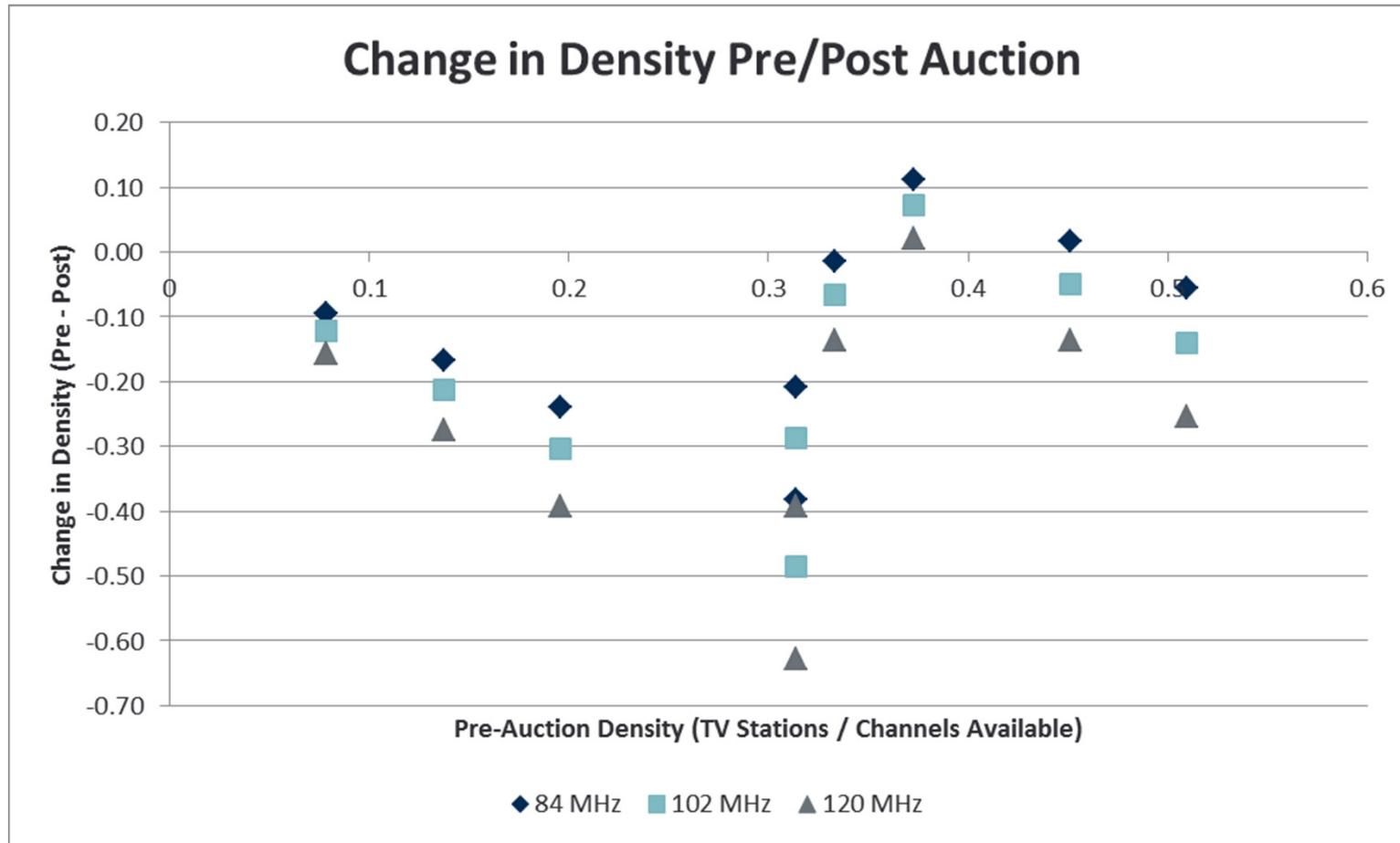
# Implications for White Space



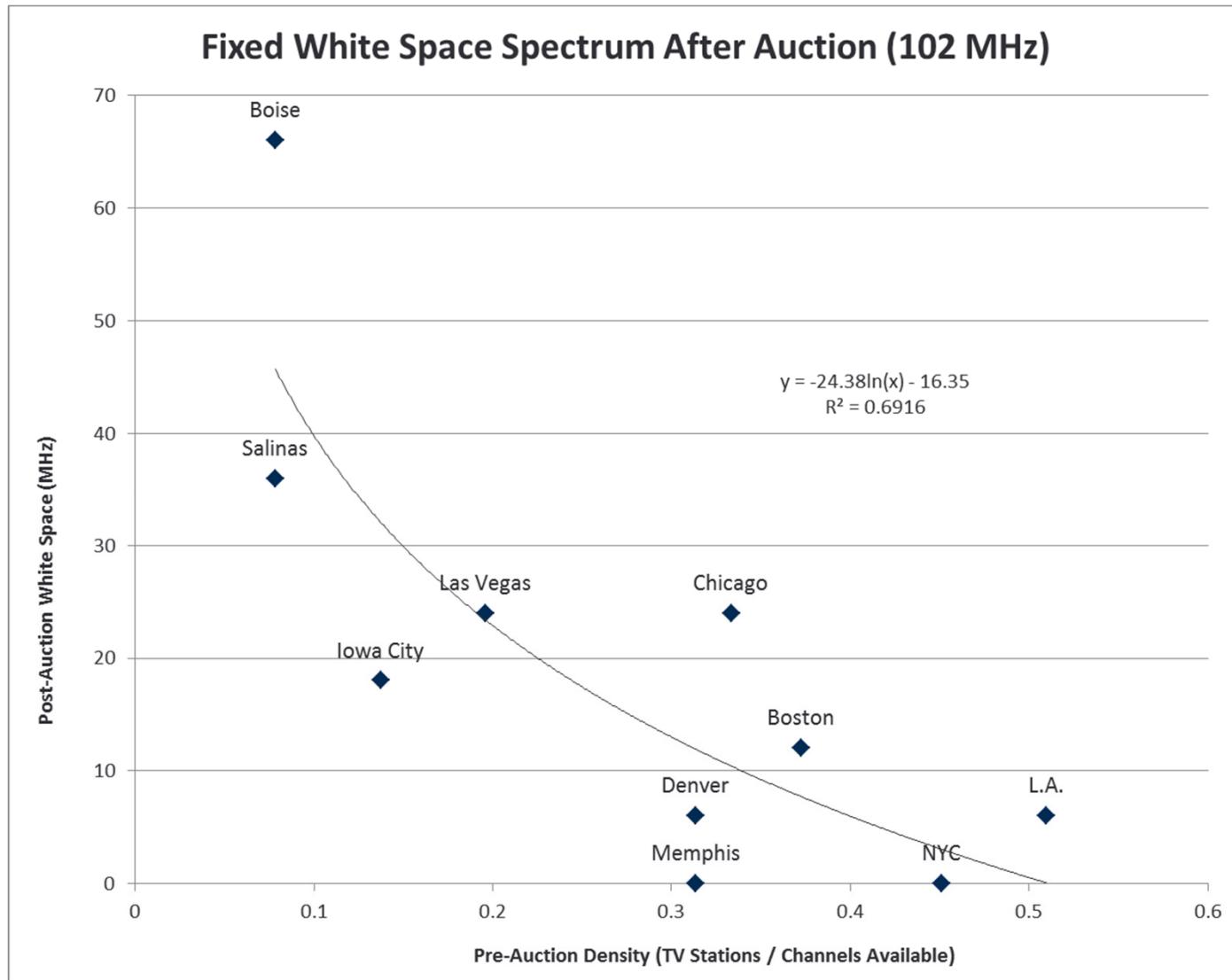
# Implications for White Space



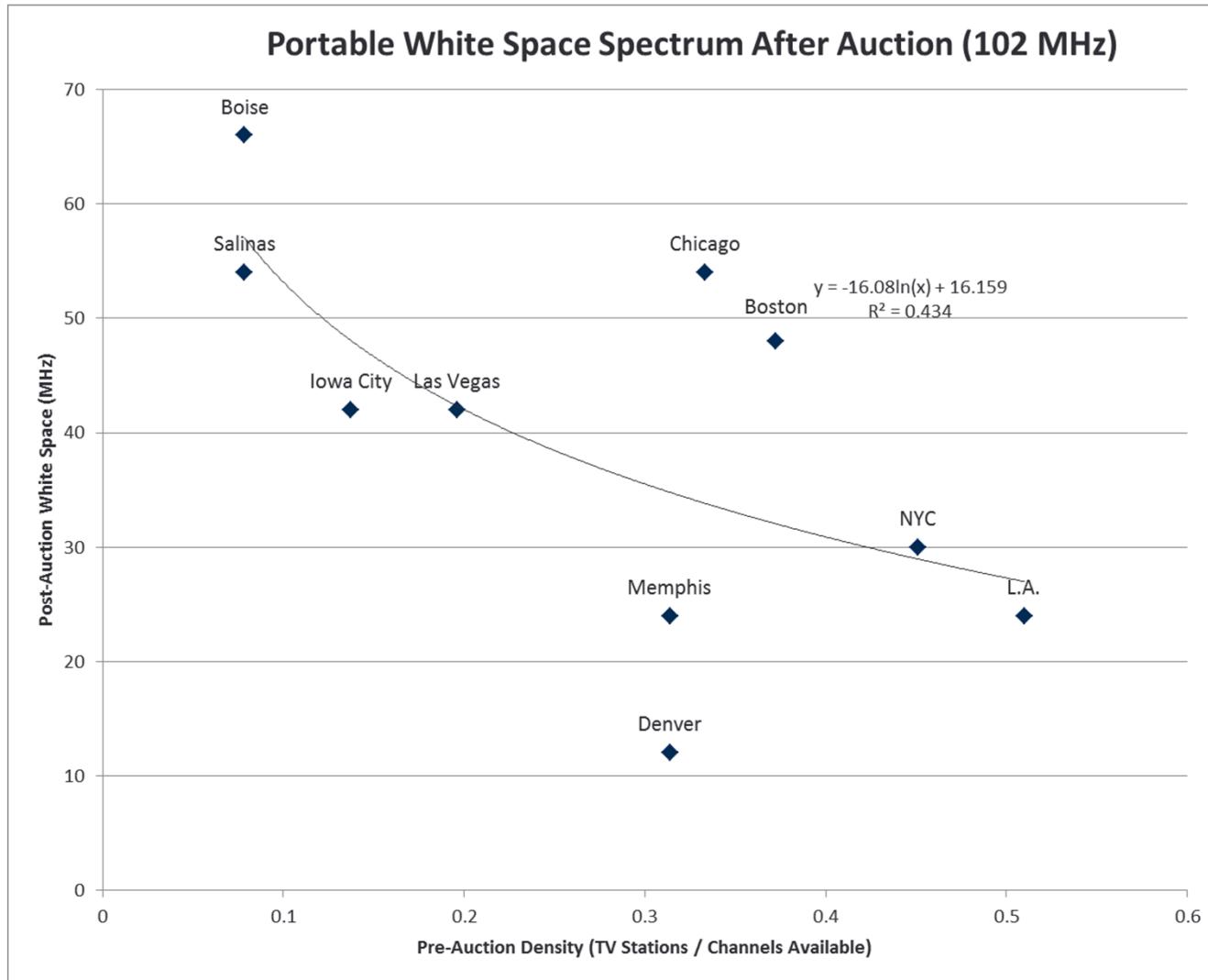
# Implications for White Space



# Implications for White Space



# Implications for White Space



# End

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## Additional Resources

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## **Band Plan Events since May**

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**FCC held workshop on band plan May 4:**

- <http://www.fcc.gov/events/learn-workshop-600-mhz-band-plan>

**FCC proposed “reverse down from 51” on May 17 (next slide):**

- <http://www.fcc.gov/document/wtb-seeks-supplement-record-600-mhz-band-plan>
- This proposal was widely criticized by industry (NAB, Carriers, Associations)

**T-Mobile and Verizon proposed a 2x35 MHz band plan in September 2013:**

- <http://apps.fcc.gov/ecfs/document/view?id=7520943668>

**AT&T responded with its preferred 2x25 MHz band plan in October 2013:**

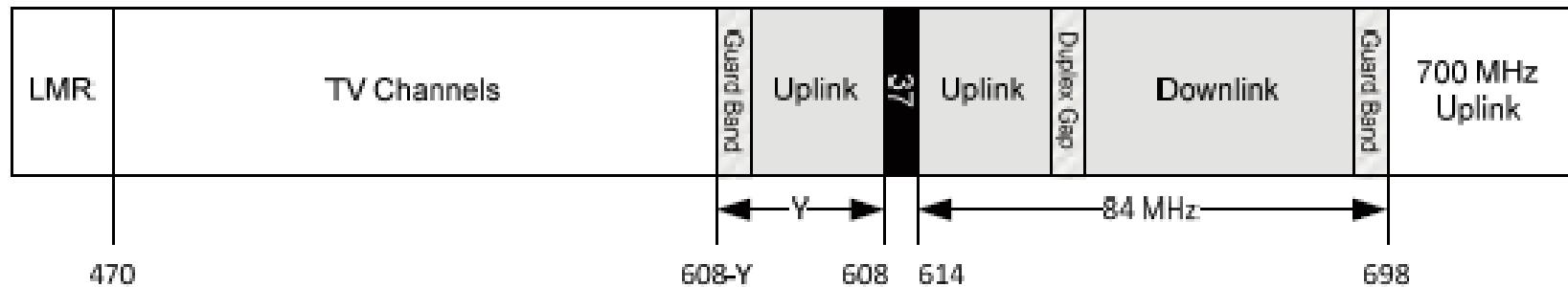
- <http://apps.fcc.gov/ecfs/document/view?id=7520948562>

# FCC's Down From 51 Reverse

Down from 51 Reversed, less than 84 MHz cleared



Down from 51 Reversed, more than 84 MHz cleared



# Presenter Information

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Dr. Coleman Bazelon is a principal in the Washington, DC office of *The Brattle Group*. He is an expert in regulation and strategy in the wireless, wireline, and video sectors. He has consulted and testified on behalf of clients in numerous telecommunications matters, ranging from wireless license auctions, spectrum management, and competition policy, to patent infringement, business valuation, and broadband deployment.

Dr. Bazelon frequently advises regulatory and legislative bodies, including the U.S. Federal Communications Commission and the U.S. Congress. He also has expertise in the federal government's use of discount rates for policy and regulatory analysis, intellectual property valuation, economic impact analysis, and antitrust and damages analysis. Throughout his career, Dr. Bazelon has had extensive experience with spectrum license auctions. He advises on and evaluates numerous auction designs and regularly serves as an auction advisor for bidders in spectrum license auctions.

Prior to joining *Brattle*, Dr. Bazelon was a vice president with Analysis Group, an economic and strategy consulting firm. During that time, he expanded the firm's telecommunications practice area. He also served as a principal analyst in the Microeconomic and Financial Studies Division of the Congressional Budget Office where he researched reforms of radio spectrum management; estimated the budgetary and private sector impacts of spectrum-related legislative proposals; and advised on auction design and privatization issues for all research at the CBO.

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Dr. Giulia McHenry is an associate at *The Brattle Group* whose primary areas of expertise are telecommunication and media, as well as antitrust litigation. She has consulted on numerous telecommunication matters and numerous expert reports related to spectrum management and valuation, broadband deployment, regulatory proceedings, Universal Service Fund, and competition policy. She has presented economic analyses to the Federal Communications Commission, and U.S. Congressional staff on behalf of clients in various regulatory proceedings.

Prior to joining *Brattle*, she was a senior economist at the Government Accountability Office (GAO), where she conducted economic analysis related to U.S. international policy, including trade and trade promotion, global financial linkages, and international development. Dr. McHenry received her Ph.D. in economics from the University of Maryland in 2009, and her BA from Wesleyan University in 2001. She enjoys the art of cooking, reading about tech policy, and translating economics into human language.

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