FINDING CHANNELS FOR THE TV RE-PACK
FACT AND FICTION

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TV RE-PACK/FACT & FICTION

- Agenda
  - Review of the Repack elements and schedule
  - What is flexible & what is not
  - News and views from NAB 2015
  - TV Study Implementation of OET-69
  - Help with choosing new channels
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- TV Repack Process
  - Reverse Auction
  - Repack TV stations
  - Forward Auction
  - The fun(ding) begins
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- What is flexible & what is not for Full Service
  - Must replicate service
  - What questions does this raise
    - What is service—area or population or both
  - Whose Yardstick do you measure with
    - FCC---TV STUDY
    - NAB---OET-69 TV_PROCESS_2010
  - Digital Replacement Translators not protected
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- What is flexible & what is not for LPTV
  - No displacement before repack
  - Channel Share???
    - What is service—area or population or both
  - Whose Yardstick do you measure with
    - FCC---TV STUDY
    - NAB---OET-69 TV_PROCESS_2010
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- **Schedule—Dates of Importance**
  - Q1 2015 Public Notice for Auction Procedures
  - Feb 2015 LPTV & XLTR Webinar
  - Q1 2015 Regional Info for Broadcaster Seminars
  - Q2 NAB 2015—Learn more & gather info
  - Q3 2015 (Now Q1 2016) FCC Conducts Incentive Auction
  - ??? FCC Releases Channel Reassignments
  - CP Applications due 3 months after Reassignment
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- Schedule—Dates of Importance
  - After CP received, Di$tribution$ to “TV Station remnants” begin
  - 3 months after fund$ received “Sharees” go silent on Pre-Auction Channels
  - FCC opens window for LPTV & XLTR displacements
  - The fun (scramble) begins
  - 39 months after Channel Reassignment Full Service broadcasters complete CPs or go silent on pre-auction channels
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- LPTV & XLTR Displacement Priorities
  - New ”Digital to Digital” Replacement XLTRS
  - Digital Replacement XLTR that are displaced
  - Licensed stations that are displaced
  - Permittees that are displaced
  - Expect 3 year CP for displacement grants

- Channel Sharing Operations
  - Will need to get on air within 12 months of sign-off from pre-auction channel
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- News and Views from NAB 2015
  - The “Buzz”—TV Repack and Drones
  - Greenhill Report--Are Valuations Over-stated?
  - AWS Auction results--$41 Billion committed
  - AWS Auction results stimulates appetite over UHF TV channels after AWS
  - Much ado about May 29th for Class A & Full Service
  - Wheeler’s Presentation
    - Two perspectives technical and commercial/lenders
There won’t be a second auction so this is it.

Wireless providers aren’t the only ones bidding
  - Rumors include Google & Netflix.

AWS Auction Success is adding fuel to the fire for higher prices for the broadcast spectrum.

The opposing litigants (NAB & Sinclair) better get out of the way.

FCC looking at whatever they can to entice stations to channel share.
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- My Notes from NAB 2015 Wheeler Presentation
  - This is a one-time deal (Fact or Fiction?)
  - Auction allows broadcasters to recover more money than spectrum is worth on open market
  - Business the same old way doesn’t work
  - Do more with less
    - Enforcement capability for FCC Field Offices is good example
  - Q1 2016 Auction expected
  - Preserve one channel in market for White-Space Devices
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- Channel sharing discussions/agreements B4 & after auction are OK among Full Service stations
- FCC Staff stretched a mile beyond normal
  - What are their needs versus wants
  - Create Lx Free and “impaired” new 5 MHz blocks
  - This will be their legacy so want to get it right
  - “White space” and “gray space” challenges
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- Resources for re-pack
  - Human
  - Computer
  - Financial
  - Hardware
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• “Tools” the FCC will need
  • Channel sharing
  • STA
  • New Forms
  • Education of the public-Share with broadcasters
  • Tool not used by FCC is ATSC 3.0
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- ATSC 3.0
  - Allows more programs per channel
  - Single Frequency Networks
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- What is “Impaired Spectrum” & who uses it?
  - Simply put-Spectrum that is not IX Free
  - Ix due to DTV Stations
  - Not desirable by Wireless Providers or at least worth a lot less

- Is it possible for LPTV or XLTR take advantage of this?
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- Where can LPTV & XLTRs find channels?
  - Based upon new displacement application process
- Identifying displacement channels w/o creating IX is a significant challenge
- International Coordination processes
- Assume available bank of channels < Channel 36
- Look for band-edge channels because only have to consider DTV IX from one side
- When do T-Band channels become available and how will FCC treat them?
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- Channels to seek
  - UHF and VHF Core are Main Stream
  - Channels 14 and 36
  - Channels 7 and 13
  - Low Band is last resort unless unique circumstance make it good fit
  - Channel share-Last, last resort

- What Yardstick will be used for channels that work
  - If FCC gets their way, it will be TV Study Program
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- TV STUDY
  - Is this the same as current program used by FCC to implement OET-69 methodology?
  - Does TV Study get the exact same results as current program
  - Whose yardstick is the reference
  - How is it different?
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- TV STUDY Differences from current OET-69 software
  - Free
  - Cell structure can be different—global versus station based
  - Longley Rice error handling. Assumes signal is not there when reliability of signal is low—opposite of current program
  - Mechanical beam tilt
  - Selectable terrain data base (Planned 1 second)
  - 2010 Census
  - Canadian and Mexican databases
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- How do I run IX analysis
  - Use “TV Study” software Version 1.3.1
  - Runs on Windows, Mac, or Linux
  - [http://wireless.fcc.gov/incentiveauctions/learn-program/repacking.html](http://wireless.fcc.gov/incentiveauctions/learn-program/repacking.html)
  - Needs support database program, SQL database of all stations
  - Determine if it is necessary to map results or not
    - Another support program needed—QGIS is a free one
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- How do I know if a channel will work using TV Study?
  - Very Scientific Method—Create a simulation of post repack channel configuration
    - Use given set of paired constraint files after confirming Feasibility Checker approves the configuration
    - Add your proposed facility
    - Run IX Analysis
  - Less rigorous is too **assume** stations on given channels and run IX analysis
  - Even less rigorous is to run IX analysis with reference Feb 22, 2012 database
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- TV Study Sample IX analysis
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- What results do I expect for LPTV & XLTRS
  - Higher Interference percentages for fewer channels
    - May lead to Ix agreements
  - Loss of input channels
    - Use Microwave or internet or other sources
  - Channel move or share
  - Equipment that needs minimum amount of change for channel swap
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- The End—Hopefully Not
- THANK YOU VERY MUCH
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- Resources for re-pack
  - Human
  - Computer
  - Financial
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- Human
  - FCC staff & Industry experts
  - Station Engineers
  - Equipment manufacturers
    - Transmitters and filters
    - Antennas & T-Lines
    - Towers
- Consultants
  - Electrical
  - Structural
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- Human
  - Installation Crews
    - Transmitter
    - Tower/Antenna/Rigging

- Computer
  - Why not use existing OET-69 platform
    - It does give reliable results
    - The results depend on where you start the study
    - Hard to analyze regional impact/daisy chain effect
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- Computer
- TV Study
  - How is it different and the same
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- Computer
  - SAT Solver
  - What does it do and not do?

- Conclusion—we have enough computer resources
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• Financial
  • All about the known vs unknown
  • Resources for Re-imbursement
  • Timing of resources
  • Channel sharing begins the funding process
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- Financial
  - Broadcaster resources
  - FCC Re-imbursement
  - Wirele$$ Provider$
  - Timing of resources
  - Channel sharing development begins the known process
  - Where does the money come from in short term
    - Lending institutions—They will command a %
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- Tools the Broadcaster will need
  - Re-define their mission and objectives
  - Issue for public stations versus commercial
  - Increased Staff or expertise for design
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- Tools the Broadcaster will need
  - Increased Staff or expertise for design
  - Station engineers
    - Scenario A
    - Scenario B
    - Scenario C
  - Consulting Engineers—Structural & FCC Filers
  - Legal—In House or Consultants--Channel sharing agreements
  - Dealing with cable providers???
  - Education of consumers
    - Boomers are getting older and more change resistant
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• Channel Share
  • LPTV sharing a FS channel is a good deal
    • Only one ERP
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- Tools the Broadcaster will not need
  - SFN planning
  - Wherever they spend the least money will get cut more
  - Outsource opportunities??