



# DTV Application Procedures and Technical Requirements – 600 MHz Repacking

March 9, 2017



# Terms and Acronyms

the **Plan** = The new *Joint Canada-United States DTV Allotment Plan* (unless otherwise specified or qualified)

**TV** = Television (includes Analog and Digital unless otherwise specified or qualified)

**LPTV** = Low Power Television (includes Analog and Digital unless otherwise specified or qualified)

**DTV** = Digital Television

**LPDTV** = Low Power Digital Television

**BC** = Broadcasting Circular

**BPR** = Broadcasting Procedures and Rules

**NLBC** = Noise-limited bounding contour

# Note about this presentation

- The information contained in this presentation focuses on the technical requirements and application procedures for the transition from a Canadian perspective
- A Broadcasting Circular will be published specifying variations from current broadcasting procedures and rules during the 600 MHz transition
  - Will include concepts covered in this presentation and the previous one given to RABC in November 2016
- Longer term changes will require some revisions to the relevant Broadcasting Procedures and Rules (BPRs)

# Review of Application and Process

Application	Criteria
Simplified	DTV applications meeting all of the following requirements: <ul style="list-style-type: none"> <li>• Same channel and phase as the <i>Plan</i></li> <li>• NLBC not exceeding contour as calculated using reference parameters in the <i>Plan</i></li> </ul>
Standard	TV or DTV applications not meeting the simplified application criteria noted above

Process	Criteria
Streamlined	DTV application meeting all of the following requirements: <ul style="list-style-type: none"> <li>• Same channel and phase as the <i>Plan</i></li> <li>• NLBC not exceeding contour as calculated using reference parameters in the <i>Plan</i> by more than 1% in any direction and not causing more than 0.5% increase in interference to population to any allotment within the <i>Plan</i> <ul style="list-style-type: none"> <li>• Allows for minor adjustments where there are difficulties in implementing reference parameters from the <i>Plan</i></li> </ul> </li> <li>• Proposed antenna structure satisfies criteria for exclusion in Section 6 of CPC-2-0-03, <i>Radiocommunication and Broadcasting Antenna Systems</i> <ul style="list-style-type: none"> <li>• Exclusion from land-use authority and public consultation requirements</li> </ul> </li> </ul>
Standard	TV or DTV application not meeting all criteria for the streamlined process noted above

# Transition Period

- Simplified Applications and Streamlined Processes only apply for DTV applications during the transition period
  - Start of transition: date of release of Allotment and Transition Plan
  - End of transition: date by which the last stations are scheduled to transition – i.e. end date of final transition phase
- Following the transition period, standard applications and associated processes apply

# ISED Notifications to Broadcasters

- ISED will notify all TV broadcasters when the *Plan* is published
  - For TV stations (regular and low power) currently operating below the to-be-repurposed band (i.e. in the repacked TV bands) and requiring changes, this will be their minimum 18 month notification
- For all TV stations (regular and low power) currently operating in the to-be-repurposed band (i.e. in the new mobile band):
  - ISED will send notices to broadcasters, as required, when the spectrum is needed for deployment of Canadian and/or U.S. mobile systems:
    - 1 year for stations located in urban areas
    - 2 year for stations located in all other areas
  - TV stations with the potential to prevent deployment of U.S. mobile systems will be scheduled to transition prior to the end of phase 10
- All TV broadcasters should ensure that ISED has accurate contact information for them

# End of TV Moratorium

- The moratorium on TV applications will be lifted at the start of transition (i.e. release of the *Plan*)
- Allows ISED to accept applications for stations transitioning as per the *Plan*<sup>1</sup> (streamlined process),
- The following applications may also be submitted, but would be accepted and processed on a case-by-case basis:
  - Modifications to *Plan* assignments (standard process)
  - Modifications to existing assignments outside the *Plan* (standard process)
    - e.g. to permit continued operations of existing stations on a secondary basis
  - New Regular and Low Power drop ins (standard process)
- Applications will not be processed on a First Come First Serve (FCFS) basis during the transition, but rather based on priority.

<sup>1</sup> Throughout this presentation “as per the *Plan*” or similar wording means an application meeting the criteria for the streamlined process or a station having transitioned that met the streamlined process criteria

# Priority of Applications

- Applications received within first 6 months of start of transition:
  - Stations scheduled to transition in the early phases in accordance with the Plan (streamlined process)
    - Processed according to scheduled transition phase – e.g. priority given to those scheduled in phase 3 over those scheduled in phase 4
  - Any stations proposing modifications to Plan parameters – e.g. unable to build to allotment/reference parameters, proposing increases (standard process)
    - Depending on location, may be subject to coordination with the U.S.
    - May also be subject to CRTC application requirements, land-use consultation
    - Important to submit within the first 6 months and as early as possible
  - Applications for new stations
    - Processed on a case-by-case basis, generally lower priority



# Priority of Applications

- Applications received after first 6 months following start of transition:
  1. Applications based on their scheduled transition phase:
    - a) Applications per the Plan (streamlined process)
    - b) Applications proposing modifications to Plan parameters (standard process)
      - ISED will work with applicants on proposed changes on a case-by-case basis for those not received within first 6 months
  2. Applications for new stations or those not part of the Transition Plan

# Application timeframes

- Applications following the streamlined process
  - Submit at least one year in advance of scheduled phase
- Applications for stations in Transition Plan not meeting the criteria for the streamlined process (standard process)
  - Submit within first 6 months and as early as possible, regardless of scheduled phase
  - Additionally, need to submit contingency plans and/or applications at least one year in advance of scheduled phase
- Applications for new stations or those not part of the Transition Plan (standard process)
  - Processed on a case-by-case basis
  - Timeframe depends on complexity of application, impact on the availability of resources, coordination requirements, etc...

# Transition technical requirements

- ISED will assess standard applications using the planning parameters and technical assumptions as specified in Annex C of the *Decision on Repurposing the 600 MHz Band*.
- These include:

Radio signal propagation model	Longley-Rice
Terrain database	CDED 1"
Population database	Statistics Canada, 2011
Longley-Rice service mode	Broadcast
Cell size	Square, 2 km/side

# Transition technical requirements

## Interference Ceilings

- Maximum increases of 0.5% station-to-station interference by population to allotments in the *Plan*
  - Stations capable of operating secondary must respect this level vis-à-vis allotments and other secondary stations.
- Temporary interference allowed during transition:
  - Maximum 2% unique station-to-station interference to stations that are scheduled to transition in a later phase, with any station receiving a maximum aggregate interference of 5%, where possible.
  - If two stations are already part of a daisy chain, interference ceilings between those two stations are not applicable if they are scheduled to transition in different phases. For those transitioning in the same phase, inter-user coordination would be required.
- Interference ceilings for vacant allotments same as for associated allotments
  - Also applies to steady-state, post transition and will require update to BPR-10

# Safety Code 6

- Applicants will need to demonstrate compliance with Safety Code 6 (SC6)
  - Operators are to ensure their installations comply with Safety Code 6 at all times, including during the Transition Process.
  - Changes to facilities such as changes in frequency, antenna height and pattern, power levels, can affect levels of exposure to RF energy
  - Assessment also needs to consider the combined effects of nearby installations within the local radio environment.
    - Includes changes to other nearby stations as a result of the transition and any simulcasting during on-air testing
    - Must consider the changes to other TV stations in previous phases up to and including those scheduled within the same phase

# Safety Code 6

- Assessments must follow procedures outlined in section 8 of BPR-1
  - The instructions in GL-08, [Guidelines for the Preparation of Radio Frequency \(RF\) Exposure Compliance Reports for Radiocommunication and Broadcasting Antenna Systems](#), must be followed when detailed calculations are used to demonstrate compliance
    - including parameters and antenna patterns for all stations

Table 3: Summary of the parameters of the proposed installation	
Parameters	
Type of service currently at the site (e.g. TV, AM, FM radio, mobile, cellular, PCS, 3G, 4G, paging, etc.), including technology used (e.g. ATSC, NTSC, UMTS, CDMA, HSPA)	
Proposed services	
Number of Sector(s)	
Frequency band (MHz) (e.g. 825-890 MHz, 1850-1990 MHz, 2120-2130 MHz)	
Antenna model / manufacturer and description (i.e. overall dimension, number of bays, spacing between radiating elements, gain)	
Antenna patterns (details regarding vertical and horizontal radiation patterns) for each sector	
Height (m) above ground and / or roof top to the radiating center of the antenna	
Azimuth (degrees) for each sector	
Downtilt (electrical) for each sector	
Downtilt (mechanical) for each sector	
Transmitter power (Watts or dBW)	
Maximum EIRP (Watts or dBW) (specify if per sector, per channel and / or per polarization)	

# Safety Code 6

- To avoid delays, please ensure all relevant information is included with the application submission
- Formal compliance assessment will be closer to beginning of on-air tests to ensure all changes to stations in the local environment up to, and including, the same phase have been considered
  - Any updates to the RF assessment must be provided at least 3 months prior to on-air testing
- Broadcasters are encouraged to exchange information pertaining to their particular installations and can work together to provide a common assessment for a site

# Reports on Transition Progress

- Applicants are expected to:
  - Submit application and/or plans at least one year in advance of end of scheduled transition phase
  - Request authority for on-air tests as early as possible following construction and no later than one week before on-air testing period
    - On-air test authority will be effective no earlier than the start of the testing window
  - Communicate with ISED as early as possible when potential problems or delays are foreseen and with sufficient time to examine proposed solutions
    - ISED will work with broadcasters to resolve issues with solutions that respect scheduled phase deadlines



# Reports on Transition Progress

- ISED will track progress and ensure transition is on schedule by communicating with broadcasters at the following intervals:
  - Nearing one year mark prior to scheduled transition phase for those who have not submitted their application and/or plans
  - Following the issuance of their letter of approval to construct to obtain updates on progress from the broadcaster, as needed
  - Approaching the on-air testing window for those who have not yet requested on-air testing authority

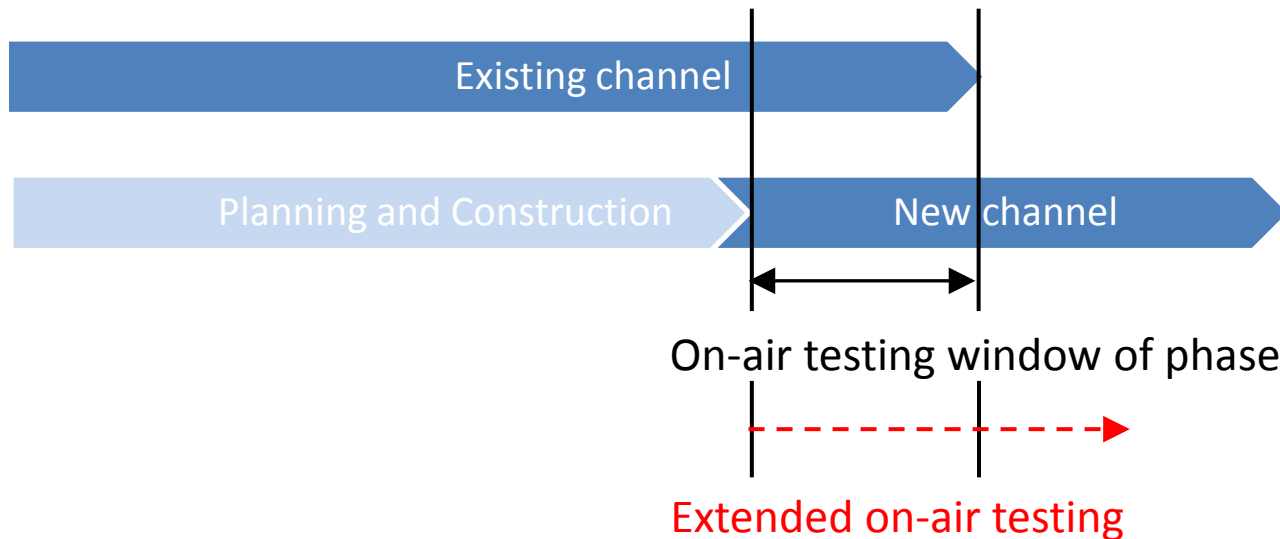
# On-Air Testing

- Coordination with other TV undertakings required when stations are part of a daisy chain and the daisy chain is not broken with sequential scheduling
  - temporary interference is greater than 2% and stations are scheduled to transition in the same phase
- Length of time of scheduled on-air testing windows are approximately 4 to 6 weeks
- ISED requires a minimum of 3 weeks continuous testing at full authorized parameters
- Broadcasters are encouraged to complete testing within on-air test windows
  - May be challenging in some cases

# On-Air Testing

Measures to facilitate testing and ensure ISED testing requirements are met

- On-air testing can extend beyond the end of a station's scheduled window<sup>2</sup> **provided that the existing channel is shut down by the end of the station's scheduled phase**



<sup>2</sup> Minor adjustment with respect to prior presentation which indicated no on-air testing after specific period allotted for each transition phase

# On-Air Testing

- Allows broadcasters flexibility to:
  - Minimize temporary interference during testing by coordinating, for example:
    - Flash cuts at the beginning of, or during, the on-air testing window
    - Testing schedules and/or parameters as needed during the on-air testing windows provided that ISED requirement below is met
  - Complete ISED 3-week continuous on-air testing requirements at full authorized parameters not limited by the end of the scheduled phase
    - Broadcasters must maintain a record of operating parameters and all complaints received during their on-air testing and submit this record to ISED at the end of the testing period
      - Record should clearly identify 3 week period of continuous testing at full parameters and periods during which testing for portions of the day or at lesser parameters occurred
    - Conditions associated with the authority for on-air testing will not be lifted until testing requirements have been satisfied and any related issues are resolved (final certification)

# Issuance of Broadcasting Certificate

## Minor changes with respect to information presented for the DTV application process in November 2016

- From prior presentation:
  - Previously indicated that the broadcasting certificate for the transitioned station will be authorized with conditions subject to final certification
    - i.e. the receipt and assessment of “as built” certification in cases where this information may not be received or assessed prior to the end of scheduled transition phase
  - Previously indicated that timeline from application submission to broadcasting certificate = 1 year with 1.5 months between on-air testing and broadcasting certificate

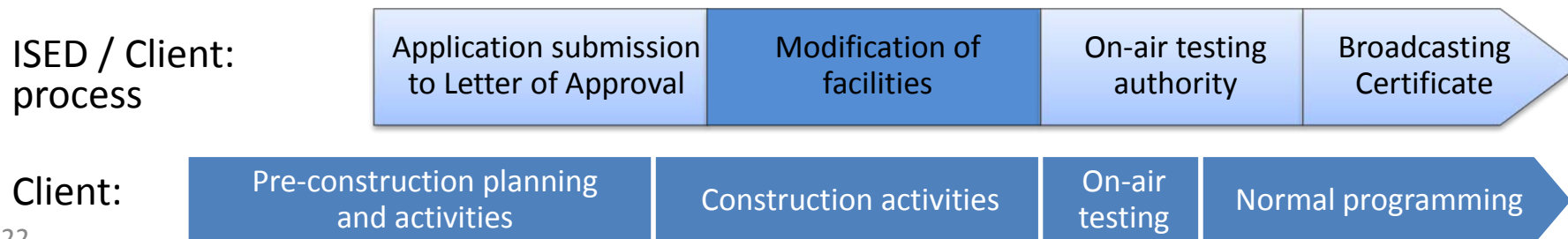
Previous indicated timeline for streamlined process:



# Issuance of Broadcasting Certificate

Minor changes with respect to information presented for the DTV application process in November 2016

- Revised approach:
  - Timeline from application submission to successful on-air testing = 1 year (approx)
  - Broadcasting certificate for existing station on pre-transition channel/parameters will not be valid beyond the station's scheduled transition phase
  - On-air testing authority issued for post-transition channel/parameters will extend beyond the station's scheduled transition phase and include sufficient time for receipt and assessment of "as built" certification
  - Broadcasting certificate for post-transition channel/parameters will be authorized following completion of on-air testing and approval of final certification.
  - CRTC notified once final broadcasting certificate is issued



# Conclusion

Keys to success:

- Plan, apply, communicate early
- Keep communications open with respect to progress, problems and/or delays

Questions/Comments:

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