



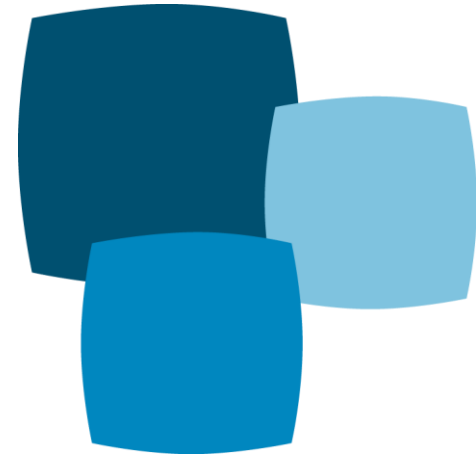
Industry
Canada

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Radio Spectrum Management in Canada



Bands Available for Broadband Deployment



British Columbia Broadband
Conference

May 9 & 10, 2011



Presentation Objective

- Understand how spectrum is managed and the availability of Radio Frequency Spectrum Bands
- Overview
 - Our Department's Framework
 - Increasing Spectrum Demand
 - Spectrum Authorization documents
 - Spectrum Auctions
 - Wireless Broadband Services: 3650 – 3700 MHz
 - Remote Rural Broadband Systems
 - cursory Review of Broadband & Microwave Spectrum





Department's Framework

- Mandate:

Industry Canada's mandate is to help make Canadian industry more productive and competitive in the global economy, thus improving the economic and social well-being of Canadians

- ✓ Radio Frequency Spectrum Management is a key contributor





Spectrum Policy Framework

- Open and competitive market
- Consultation
- Spectrum allocation
- Utilization and licensing policies
- Fair and transparent licensing





Spectrum Policy Framework

- Support the efficient functioning of markets by:
 - ✓ permitting the flexible use of spectrum to the extent possible
 - ✓ harmonizing spectrum use with international allocations and standards, except where Canadian interests warrant a different determination
 - ✓ making spectrum available for use in a timely fashion
 - ✓ facilitating secondary markets for spectrum authorizations
 - ✓ clearly defining the obligations and privileges conveyed in spectrum authorizations
 - ✓ ensuring that appropriate interference protection measures are in place





Spectrum Policy Framework

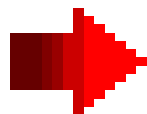
- Support the efficient functioning of markets by:
 - ✓ reallocating spectrum where appropriate, while taking into account the impact on existing services, and
 - ✓ applying enforcement that is timely, effective and commensurate with the risks posed by non-compliance





Briefly - Policy and Regulatory Roles

Policies:



Industry Canada	- Telecommunications - Radiocommunications
Canadian Heritage	- Broadcasting

Regulate:



Industry Canada	- Radiocommunications
CRTC	- Telecommunications - Broadcasting





Increasing Demands for Spectrum

- Technology advancing rapidly
- Trade barriers falling – globalization
- Convergence of technologies, services & markets
- Mergers & acquisitions – industry restructuring
- Dramatic growth in wireless communications
- Phenomenal growth of the Internet





Spectrum Authorizations Documents

- Key Categories of Spectrum Document
 - Radio Standards Specifications (RSS)
 - Radio Standards Procedures (RSP)
 - Spectrum Utilization Policies (SP)
 - Standard Radio System Plans (SRSP)
 - Client Procedure Circulars (CPC)

Industry Canada documents are available online at:

www.ic.gc.ca/spectrum





Spectrum Direct – www.ic.gc.ca/spectrumdirect

- View accounts for licences and invoices
- Apply for new frequencies
- Search Industry Canada database for existing stations and frequencies



Licence-exempt Spectrum Bands

- Bands of major interest are
 - ✓ 902 – 928 MHz
 - ✓ 2400 – 2483.5 MHz
 - ✓ 5725 – 5875 MHz
 - ✓ 24 050 – 24 250 MHz
- Per Spectrum Utilization Policy “Technical and Operational Requirements for Licence-exempt Wireless Local Area Networks and Other Radio Services in the 5 GHz Range” (SP-5150)
 - ✓ 5250 – 5350 MHz
 - ✓ 5470 – 5825 MHz





Licence-exempt Documents

- Radio Standards Specification entitled, “Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment” (RSS-210)
- Radio Standards Specification entitled, “Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category II Equipment” (RSS-310)





Canadian Ownership and Control

- Industry Canada is mandated by the Radiocommunications Act and its associated regulations to ensure applicants for Carrier License meet established requirements.
- Carriers are, operators of interconnected (Public Switched Network) radio-based facilities for compensation
- Reference: CPC-2-0-15
- Foreign Investment in Telecom review in progress





Spectrum Auctions

A number of auctions have been completed already

- ✓ 2 GHz – Personal Communications Services & Advance Wireless Services
- ✓ 2.3 GHz – Wireless Communications Services (WCS)
- ✓ 3.5 GHz – Fixed Wireless Access (FWA)
- ✓ 24 GHz – Broadband Wireless Access (BWA)
- ✓ 38 GHz – Broadband Wireless Access (BWA)
- Transferability & divisibility provisions for secondary access
- Consultations in progress for 700 MHz & 2500 – 2690 MHz





Wireless Broadband Services, 3650 – 3700 MHz

- Shared basis, all licensees will have equal access to spectrum
- Most will be *Carriers* and therefore must meet requirements for Canadian Ownership and Control
- No fees presently, but they're coming
- Harmonized with USA
- Contention-based protocols to manager interference
- Reference: CPC-2-1-26





Wireless Broadband Services, 3650 – 3700 MHz

- Highlights of Licence Conditions
 - Site-specific data must be uploaded to Industry Canada
 - Licensee-to-Licensee coordination required
 - Must comply with technical guidelines
 - Environmental process, radio frequency fields and land-use consultation must be adhered to
 - Mandatory Antenna Tower and Site Sharing





Remote Rural Broadband Systems (RRBS)

- Frequency range: 512 – 698 MHz, TV Channels 21 – 51
- Department will only consider licence applications for remote rural communities in unallotted & unassigned broadcast spectrum in television channels 21 – 51, excluding channel 37
- Only subscriber-based broadband Internet applications will be considered at this time
- Bit rate based licence fee per radio frequency for each transmitter or receiver
- Reference: CPC-2-1-24





Remote Rural Broadband Services

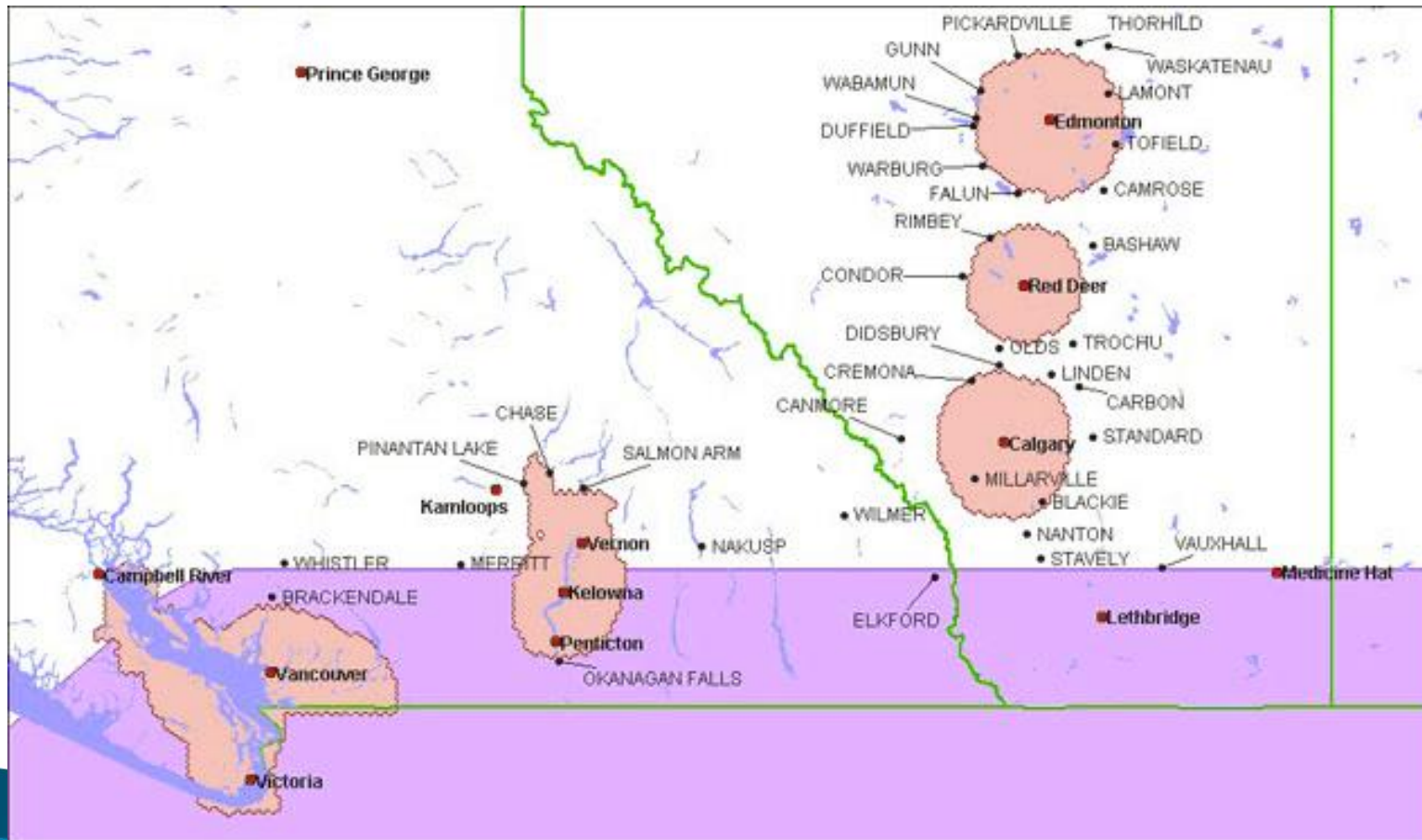
- Definition of Rural and Remote Areas:
 - Less than 100,000 people in a 50 km radius according to last Census (2006)
 - Industry Canada evaluates each application on a case-by-case basis
 - Maps will be updated as required with new census information





Remote Rural Broadband Systems

- Examples of restricted areas in B.C. and Alberta



Note: Pink and purple areas not available for licensing



Remote Rural Broadband Systems

- Highlights of Licence Conditions
 - ✓ Subscriber-based Internet applications only
 - ✓ Intended for remote and rural areas, coverage must not infringe upon restricted areas
 - ✓ Must comply with technical guidelines
 - ✓ Environmental process, radio frequency fields and land-use consultation must be adhered to.
 - ✓ Licensees must submit written progress reports to the Department within one year of licence issuance to demonstrate deployment





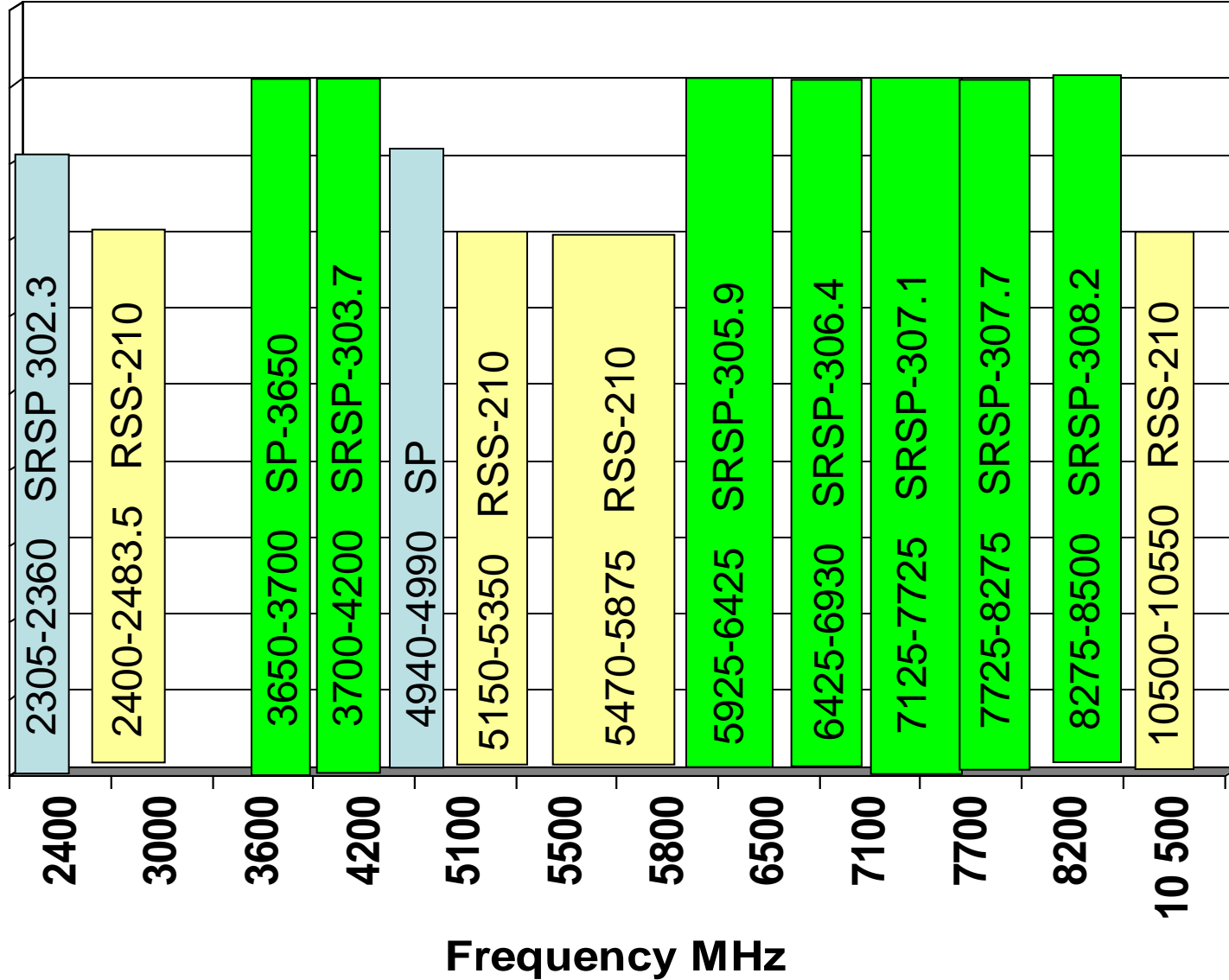
Remote Rural Broadband Services

- Equipment manufactures:
 - Presently 2 manufacturers of RRBS equipment certified for use in Canada
 - Anticipation 2 additional manufactures will release products in late 2011 or early 2012
 - Linked to Television White Space in U.S.



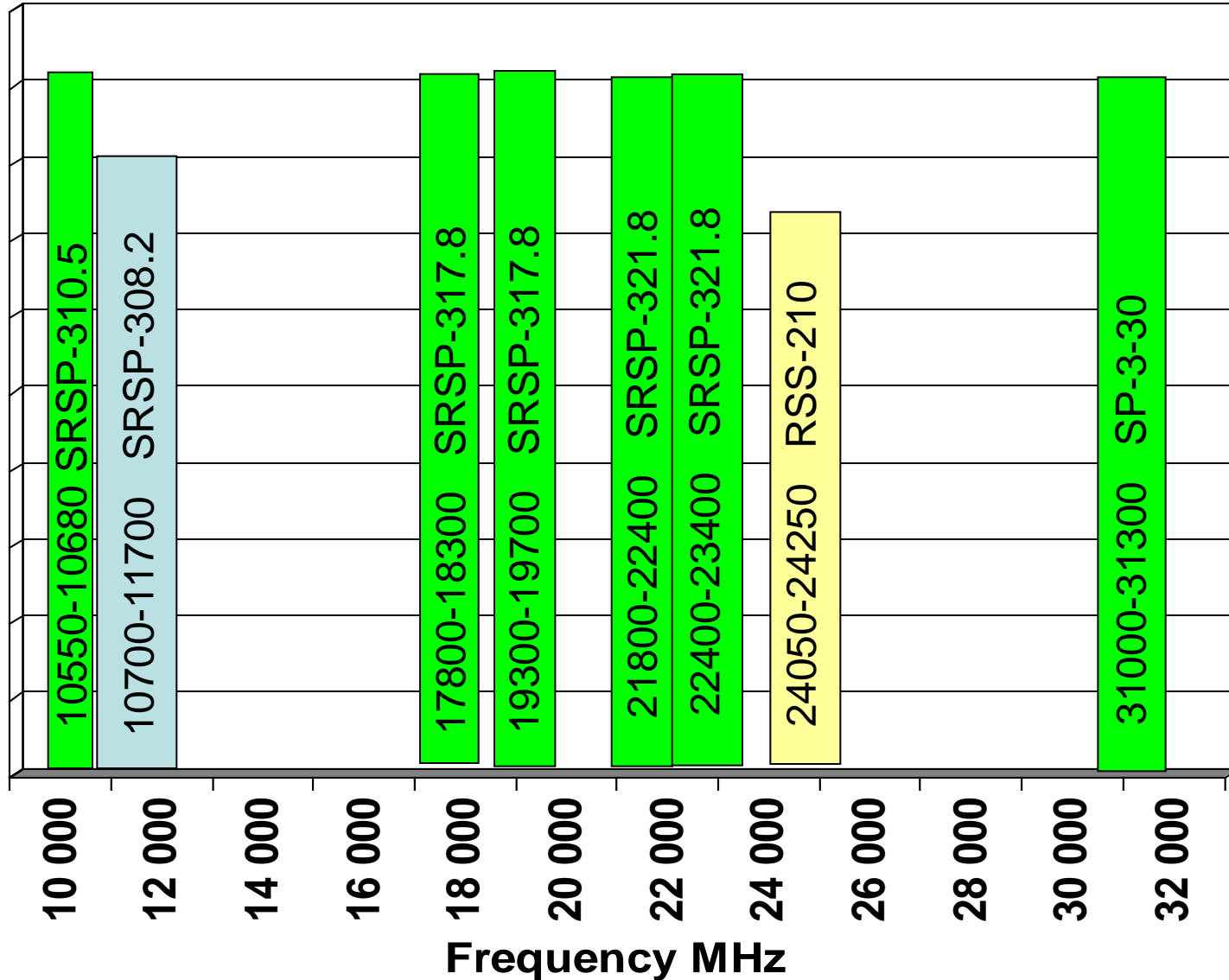


Cursory Review of Broadband & Microwave Spectrum





Cursory Review of Broadband & Microwave Spectrum





Working with Industry Canada

- ✓ www.ic.gc.ca
- ✓ www.ic.gc.ca/spectrum
- ✓ www.ic.gc.ca/spectrumdirect
- ✓ www.SpectrumGeo.ic.gc.ca
- ✓ **RIC-66: Contacts for Industry Canada Districts**
 - ✓ 1 800 667-3780 British Columbia & Yukon
 - ✓ 1 800 267-9401 Southern Alberta
 - ✓ 1 800 461-2646 Central and Northern Alberta
 - ✓ 1 877 510-7875 Southern Saskatchewan
 - ✓ 1 877 783-7757 Northern Saskatchewan
 - ✓ 1 800 665-3421 Manitoba



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