

Ministry of Economic  
Development



*M a n a t ū Ō h a n g a*

Radio Spectrum  
Management

# Review of digital conversion policy for the UHF-TV band

A discussion paper

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# INTRODUCTION

## Digital television

- 1 Until relatively recently, all television broadcasting in New Zealand employed analogue terrestrial transmission networks, and all household television receivers were analogue-based.
- 2 Digital television was introduced through the SKY Television satellite service and Saturn (now TelstraClear) cable service in Wellington and Christchurch. Subscribers are provided with a decoder (set-top box) to convert the incoming encrypted digital signal for input to the household analogue receiver.
- 3 Freeview (a consortium of free to air broadcasters) commenced a satellite service in 2007 and has now (2008) implemented a digital terrestrial network to around 75% of the population.
- 4 Freeview's television broadcasters (Television New Zealand, Mediaworks, Maori Television Service), along with SKY, NZ Racing Board and some other parties, continue to operate analogue terrestrial networks in the VHF and UHF frequency bands.
- 5 Digital technology allows the transmission of more information over a given bandwidth than can be achieved with analogue technology. With 'standard definition television' (SDTV), ten digital TV channels can replace one analogue TV channel: and with 'high definition television' (HDTV) at least two digital TV channels (with residual capacity for some further SDTV channels) can be substituted.

## The Digital Transition

- 6 A 'digital transition' from analogue TV to digital TV requires substantial investment by broadcasters (transmission infrastructure), content providers (studio facilities, particularly for HDTV production) and households (digital receivers and/or set-top boxes). Government intervention in the transition process is necessary to ensure that:
  - fair and effective competition between broadcasters is sustained;
  - public service broadcasting is supported;
  - opportunities for new broadcasters and content providers are maintained;
  - households are able to make informed decisions about services, content and receiving equipment;
  - spectrum is used efficiently; and
  - unused spectrum is returned for additional broadcasting or alternative uses (eg, broadband or cellular services).

## Digital Conversion Policy

- 7 Government has adopted a range of policy measures to support the digital transition, including a decision in 2003 which allows television licence right-holders to convert their terrestrial spectrum licences from analogue to digital at any time, subject only to licences being in use and to re-valuation.
- 8 The Ministry is now seeking comment from stakeholders on ways in which this digital conversion policy might need to be modified to reflect the recent digital television developments in New Zealand.

## CURRENT NEW ZEALAND POLICIES

### Cabinet decisions

- 9 The objectives of the transition from analogue to digital services, and Analogue Switch Off (ASO) have been agreed by Cabinet<sup>1</sup> and are:
  - to release spectrum for allocation to new broadcasting or other uses (for example, mobile applications or broadband wireless access);
  - to facilitate re-planning of the UHF spectrum band for greater efficiency and to encourage new broadcasting entrants;
  - to enable cost and energy savings to be realised by terminating the requirement for simulcast transmission in analogue and digital formats; and
  - to enable consumers to determine their long term reception equipment needs, by minimising confusion about the implications of analogue switch-off.
- 10 To further these objectives, Cabinet, on 15 October 2007:

12 **noted** that spectrum policies agreed to date include:

- 12.1 an option for right-holders to convert their spectrum licences from analogue to digital at any time, subject only to licences being in use and to re-valuation;
- 12.2 agreed terms of renewal contracts for UHF analogue licences due to expire in 2010, for a ten year period (2010 to 2020);

- 11 The arrangements for the 2010 renewal of the UHF analogue TV licences were developed in 2004 and offered to broadcasters in early 2005. They were based on the limited information available at that time concerning the likely future scenarios for digital TV and the use of the UHF band in New Zealand. The flexible licence conversion policy and the choice of a ten year renewal period (rather than the usual 20 year period) reflected this uncertainty.

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<sup>1</sup> Cabinet paper– *Digital television: process and policy for the transition to analogue switch-off*, MCH 2007

- 12 The effect of the policies quoted in paragraph 10 is to create a group of TV licences ('legacy analogue' in the table below) that may or may not be converted to digital TV licences and that effectively expire in 2020 (ie, likely to be several years after the ASO date). These licences carry no conditions of use, modification or surrender. The majority are held by SKY Television (used for Pay TV, Prime and Maori Television), the Racing Board and some regional television stations.

Type of licence	Expiry date	Must be in use at ASO?	Convertible to digital licences?	Surrender at ASO?	Subject to frequency and technical parameter changes?
Legacy analogue	2010 with right of renewal (provided licence is used) to 2020	No	Yes	No	No

- 13 Since making the 2010 renewal offers, future plans for the UHF TV band have become much clearer, including the development of the Freeview digital terrestrial platform and Government policies on such related matters as ASO. To support these plans, Cabinet noted in the same Minute that it had further agreed to:

- 12.3 allocation of three nationwide sets of digital licences, without resource charge until analogue switch-off, to TVNZ, Mediaworks and Kordia, and no further digital licences to be allocated in the UHF-TV band, other than to extend the coverage provided by these licence sets, without further Cabinet consideration of allocation options;
- 12.4 analogue licences used for the simulcast of free-to-air services being carried on the digital terrestrial licences allocated without resource charge be cancelled, without recompense, at [analogue] switch-off;
- 12.5 the three sets of digital terrestrial licences be renewed on a non-contestable basis for a period of twenty years from analogue switch-off, on the established basis for determining the resource charges then to apply;

- 14 The effect of this group of policies is to create a group of free-to-air digital licences ('FTA digital transition' in the table below) that will be renewed for twenty years after ASO, subject to conditions that include:

- the digital licences must be 'in use' at ASO;
- all analogue licences used for simulcasting ('FTA analogue simulcast' in the table below) must be surrendered at ASO; and
- licensees must accept any change of frequency and technical parameters required to consolidate use of the UHF-TV spectrum and make available any unused capacity to other program providers or uses.

- 17 **agreed** that any new or amended UHF analogue licences created after 1 December 2007 be subject to a requirement that the licence is cancelled or transferred to the Crown, without recompense, with effect from the analogue switch-off date;

- 15 Cabinet here agreed that all new analogue TV licences ('new analogue' in the table below) would be granted under conditions similar to those for digital transition licences: ie, subject to cancellation if unused at ASO, and to changes in frequency and technical parameters if converted to digital TV licences, with a 20-year right of renewal. The various licence groups then become:

Type of licence	Expiry date	Must be in use at ASO?	Can be converted for digital use?	Surrender at ASO?	Subject to frequency and technical parameter changes?
Legacy analogue	2010 with right of renewal (provided licence is used) to 2020	No	Yes	No	No
FTA digital transition	ASO then 20 year renewal	Yes	N/A	No	Yes
FTA analogue simulcast	ASO	N/A	N/A	Yes	N/A
New analogue	ASO then 20 year renewal if converted to digital	Yes	Yes	If not in use	Yes

- 16 Clearly the terms and conditions under which these different groups of licences are held are at variance. Cabinet therefore has:

14 **noted** that switching off analogue transmission creates [. . .] exceptional circumstances, and it is desirable that relevant spectrum policy be reviewed to ensure analogue switch-off objectives are met;

and

19 **agreed** to suspend the 2003 policy allowing right-holders to convert their analogue licences to digital at any time, pending a review, in consultation with industry stakeholders, and the determination of a post analogue switch-off policy;

20 **agreed** that the objectives of this review will be:

20.1 to achieve consistency with the objectives of analogue switch-off [. . .]

20.2 to ensure the earliest practical digital dividend;

20.3 to ensure reasonable access is available to acquire either capacity or actual licences by new entrants, whilst not unreasonably impinging on existing property rights and the commencement of new digital services by right-holders;

20.4 to encourage capacity utilisation;

and

22 authorised the Minister of Broadcasting and the Minister of Communications to approve a discussion paper to guide consultation with interested parties on the review of the 2003 policy enabling right-holders to convert their analogue licences to digital;

17 This discussion paper addresses that directive.

## **Policy outcomes**

- 18 The Ministry of Economic Development is responsible to the Government for efficient use of the radio spectrum, in order to underpin economic development, maintain effective competition and maximise its value to society. Concordant with that responsibility, the desired outcomes from the digital transition process are:
- a that the Crown retains the ability to plan the efficient use of the present UHF-TV band, including allocation of unused spectrum for other uses;
  - b that all digital TV licences are used to capacity, so far as is practicable, particularly before ASO;
  - c that all analogue TV licences revert to the Crown at ASO;
  - d that there are opportunities for new services and broadcast content providers to enter the market;
  - e that there is a sufficient range of digital TV broadcasters to maintain competition in the TV broadcasting market.

# **DIGITAL CONVERSION POLICY ISSUES**

## **The digital dividend**

- 19 A 2006 cost–benefit study by Spectrum Strategy Consultants estimated that there would be a net benefit of approximately \$230 million in making the analogue-to-digital transition, provided that ASO occurs by 2015. The study confirmed the desirability of an early ASO date. The ASO process is, in fact, expected to be completed by 2015, possibly earlier.
- 20 A change of frequency and technical parameters for digital TV licences may be desirable at or after ASO to optimise frequency planning. This has been mandated in the Freeview licence contracts and in ‘new analogue’ contracts, but does not apply to other analogue TV licence-holders.
- 21 Government agreed in October 2007 that ASO would apply to all free-to-air services (including Prime and regional services), and has noted that the application of ASO to analogue right-holders who have no plans for transition to digital transmission will need to be discussed with the broadcasters affected.
- 22 If, the remaining subscriber-service analogue TV licences were allowed to continue beyond ASO, frequency re-planning may be compromised, delaying realisation of the digital dividend until the licences expired in 2020. Perhaps, therefore, there needs to be a mechanism for clearing those licences from the UHF-TV band at ASO.

**Issue 1a**

Do you agree that legacy analogue TV licences (in use, unused and/or unconverted) should be subject to cancellation at ASO? Why or why not?

**Issue 1b**

How should any such cancellation be effected (recognising that there are unencumbered contracts for renewal until 2020 already in existence)?

**Spectrum efficiency**

- 23 'Legacy analogue' TV licences are not the only impediment to TV band re-planning and realisation of the digital dividend. There is also the issue of how capacity on the new digital TV multiplexes is to be managed to promote efficient spectrum allocation.
- 24 Analogue licences in the UHF-TV bands were planned in the late 1980's, when the coverage expectations of potential rightholders were unknown. The licences were based on the ITU-R interference protection parameters for analogue services. They were relatively high-powered, with co-channel licences needing to be separated by substantial guard bands.
- 25 Digital TV networks can operate at lower power levels than analogue networks, and require lower protection ratios under ITU-R standards. The overall effect is to reduce substantially the bandwidth required to implement a TV network (ie, a nationwide series of licences). In addition, and unlike analogue licences, digital licences allow the simultaneous output of multiple programmes within a single transmission (a 'multiplex').
- 26 Should a network owning (say) three analogue licences and transmitting on three TV channels convert the licences to digital TV, it would thereby acquire the capacity to transmit on three multiplexes, accommodating up to 30 SDTV channels. This would leave the network with an immediate 'surplus' of 27 channels, a patently inefficient use of spectrum.
- 27 The Government's objectives for spectrum efficiency require the consolidation of transmission capacity into an optimal number of licences. If there were currently 30 channels on 30 analogue licences and a known intention on the part of broadcasters to roll-out another 30 channels after conversion from analogue to digital licences, the entire 60-channel output could be carried on six licences as SDTV, or (say) 20 licences as a mixture of SDTV and HDTV. In either case, there would be a substantial number of licences surplus to the industry's requirements.
- 28 It is noted that forecasting the actual level of demand for such services prior to ASO is difficult, and is complicated by uncertainty over the extent to which high-definition (HDTV) services, requiring greater bandwidth, will be introduced. Overseas experience suggests that viewers are likely to place pressure on broadcasters for increasing amounts of HDTV programming, due to the greater quality of the viewing experience.
- 29 The 'worst-case scenario' in this context is direct conversion of licences from analogue TV to digital TV with no re-planning, consolidation or new content. The result, potentially, is a patchwork of digital multiplexes extending across the full

frequency range of the UHF-TV band, each carrying one or two TV channels and with up to 80% of actual capacity idle.

- 30 The process of re-planning and consolidation consequently has to be managed if the Government's objectives are to be realised. Some options for a regulator might include:

**Re-planning**

- a condition on all digital TV licences<sup>2</sup> that requires acceptance of changes to frequencies and technical parameters where they are necessary to effective band re-planning;

**Consolidation**

- a condition on licence conversion requiring the licence-holder to exchange (say) two analogue TV licences for each replacement digital licence; or
- a requirement that holders of digital TV licences consolidate their transmissions on the minimum practicable number of licences and relinquish any unused licences that result;

- 31 The process for defining the preferred frequency band(s) to be reallocated to digital TV post-ASO, of re-planning digital licences to efficiently use the residual spectrum that will still be used for broadcasting purposes, and of determining the preferred allocation mechanism, has not yet been scoped or initiated, but will obviously be essential in the near future and well before ASO.

- 32 This work will necessarily need a consideration of available technologies, expected types of services sought in New Zealand, and overall Government policies. The work, whose timing and priority would have to be determined by Cabinet, will to some extent be iterative and will include at least one stakeholder consultation process. In due course, Cabinet will make decisions on the overall outcome. Views on related issues are being canvassed in the current Digital Broadcasting Review of Regulation (see the MED and Ministry for Culture and Heritage websites).

**Issue 2a**

Do you agree that policies to ensure effective band re-planning and consolidation are needed? Why or why not?

**Issue 2b**

Do you support identical treatment of all analogue licences? Why or why not?

**Issue 2c**

Which of the following conditions should apply?

- (i) surrender of two analogue licences (if held) for each replacement digital licence? or

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A condition requiring frequency changes is already incorporated in the licences granted for the initial terrestrial digital services (Freeview).

- (ii) mandatory consolidation of the licensee's broadcast channels on to the minimum practicable number of digital TV licences and the surrender of all other licences held? Why or why not?
- (ii) mandatory frequency changes, if required? Why or why not?
- (iii) mandatory changes in technical parameters, if required? Why or why not?
- (vi) any other condition?

## **New entrants**

- 33 The Government wishes to ensure that there are opportunities for new broadcasting services and broadcast content providers to enter the market. This can be achieved:
- by creating new digital TV licences specifically for new entrants;
  - by creating 'public' shared licences (multiplexes) open to use by new entrants under defined conditions; or
  - by mandating policies that enable new entrants to utilise unused capacity on existing licences.
- 34 Creating a new digital TV licence for a new entrant does not necessarily enhance spectrum efficiency, in that a new broadcaster or content provider is unlikely to require the full ten-channel SDTV capacity of a licence. If the content to be broadcast is in HDTV format, the justification for an exclusive licence may be greater.
- 35 Creating a new shared licence affords an intending broadcaster or content provider access to the market without the necessity to acquire, own or manage a spectrum licence. Should more new entrants join the market, it is a simple matter to create the licences for further multiplexes.
- 36 The most efficient policy, in terms of spectrum use and infrastructure investment, is to utilise spare capacity on existing multiplexes. This may be difficult to promote, as private interests are unlikely to welcome new entrants to the highly competitive digital TV market. Incentives for established broadcasters to enter into such capacity-leasing arrangements are not particularly strong, and the power resides with the incumbents. Ensuring that a licence is allocated for its true market value may give incentives for a licence holder to lease capacity, but it is difficult to envisage that a pure market approach would always resolve the issues.
- 37 Nonetheless, various types of carriage conditions are common in overseas jurisdictions where private TV networks may, as a condition of their licensing, be required to broadcast public service and regional television channels, or vice versa. Such measures enhance the 'viewing package' available to the public.
- 38 Another option, providing a right of access by new entrants to unused transmission facilities, is often practicable only when the network operator is not a broadcaster, but instead functions as a common carrier.
- 39 These types of access can only be guaranteed through imposing pertinent conditions on new digital TV licences. Given that the majority of such licences in

New Zealand have been granted without these conditions, legislative authority might be needed to enforce them, although case-by-case negotiation is preferred.

### **Issue 3a**

Do you agree that the Government needs to set policies in place to provide opportunities for new broadcasting services and broadcast content providers to enter the market? Why or why not?

### **Issue 3b**

If you agree with 3a, how might these opportunities be provided?

- (i) through the creation of new digital TV licences? Why or why not?
- (ii) through the creation of a shared “public” licence? Why or why not?
- (iii) through carriage obligations? Why or why not?
- (iv) through some other policy?

### **Issue 3c**

If you support any one of 3b (i) – (iv), which option or options might best implement such a policy?

- (i) by attaching the condition to new licences? Why or why not?
- (ii) by regulation/legislation? Why or why not?
- (ii) by negotiation with all affected licence-holders? Why or why not?

## **Certainty of investment**

- 40 The digital TV market is competitive, volatile and subject to rapid changes in technology and fashion. In such a high-risk environment, broadcasters tend to be cautious about investing in new infrastructure and services unless there is some certainty of tenure. In New Zealand this is, *inter alia*, determined by access to spectrum rights, both through ownership and assurance of renewal.
- 41 ‘Legacy analogue’ licences have guaranteed ownership to 2010 and the right of renewal to 2020, with no requirement for digital conversion, surrender at ASO or frequency and technical parameter changes. ‘FTA digital transition’ licences have guaranteed ownership until ASO and a right of renewal (at a commercial value) for twenty years thereafter, subject to being in-use, and any necessary frequency and technical parameter changes. ‘New analogue’ licences are valid until ASO, renewable thereafter only if converted to digital TV use in the interim, and subject to the same conditions as FTA digital transition licences.
- 42 There are obvious differences in the level of certainty attached to each group of licences. It would be of obvious benefit to the market for a ‘level playing field’ to be created.

### **Issue 4a**

Do you agree that the expiry and renewal conditions all TV broadcasting licences, analogue or digital, should be aligned? Why or why not?

#### **Issue 4b**

If you agree with 4a, do you support:

- (i) expiry of all analogue licences at ASO (this would entail legacy analogue licences being extended only to ASO, rather than to 2020)? Why or why not?
- (ii) a 20-year right of renewal for all active digital TV licences after ASO? Why or why not?
- (iii) some other period of renewal?

Please indicate what mechanism you would see being used to implement your preferred option or options.

## **SUBMISSIONS**

Submissions should be provided to the Ministry as soon as practicable, but in any case before 5.00pm, Monday 9 June 2008. This will enable the Ministry to analyse the views provided, undertake any specific discussions deemed necessary, and report to Ministers by 30 June 2008.

The Ministry requests that submissions are provided electronically to [radiospectrum@med.govt.nz](mailto:radiospectrum@med.govt.nz) in either word or PDF format. Any questions about this paper or the process should also be directed to this e-mail address.

The Ministry's preferred format is:

*Respondent's name*

*Organisation (or, for example, 'private individual')*

*Nature of organisation's interest (eg, 'TV content producer')*

*Email address or other address for written communications*

*Response to Issue 1a*

*Response to Issue 1b*

*....etc*

*Any other matters that you believe the Ministry should consider in reviewing the present digital conversion policies.*

The Ministry intends to publish all submissions on the Ministry web site, and notes that submissions are subject to the Official Information Act 1982. If a respondent considers that there are grounds for the Ministry to withhold key information in a submission, this information should be clearly marked and the relevant reason stated so that the Ministry can determine whether withholding may be justified under the Act.