

The Radiocommunications Environment in New Zealand

- [Characteristics of the radio spectrum](#)
- [Economic benefits](#)
- [Background to the Act](#)
- [Role of the Ministry of Economic Development](#)
- [Maximising value](#)
- [Public policy objectives](#)
- [Treatment of incumbents](#)
- [International obligations](#)

The radiocommunications environment in New Zealand is managed, on behalf of the Crown, by the Ministry of Economic Development. All legislative requirements for the management of the radio spectrum are enshrined in the one statute - the Radiocommunications Act 1989, and its subservient regulations. The following sections give an overview of framework within which this management takes place.

Characteristics of the radio spectrum

A combination of factors, including the nature of radio frequencies themselves, equipment manufacture and the phenomenon of interference, determine the economic value of the spectrum.

The radio spectrum is, generally speaking, heterogeneous - some frequencies are more suited to certain uses than others. In practice, such factors as planning and co-ordination requirements and the availability of suitable transmitters or receivers greatly limit the practical uses for particular spectrum. Furthermore, because of the possibility of interference, spectrum is unable to sustain unlimited services at any preferred frequency, in any desired location and using any available technology. In order to avoid interference or minimise it to an acceptable level, transmitters must be separated by distance, frequency or time, or a combination of these factors. In effect, transmitters must be accorded exclusive use of the spectrum in terms of these factors if the spectrum is to be exploited efficiently. In general, the higher the frequency, the less the signal is able to propagate over distance and over or through obstacles, thus lending such frequencies to uses where transmitters and receivers are in fixed locations in direct line of sight. Furthermore, the higher the frequency the larger the bandwidth generally required.

The ability to use electromagnetic energy for communications purposes is effectively limited by the current state of technology. Technically, available frequencies today range from about 9 kHz to 300 GHz. The upper limit of 300 GHz may be able to be raised over time with technical progress.

Economic benefits

In order to provide an increasingly large number of telecommunications and broadcasting services, access to the radio spectrum is essential. If the radio spectrum could be used without one use affecting, or having the potential to affect another, it would not be necessary for its use to be regulated. The phenomenon of interference, however, makes regulation necessary in order to ensure the radio spectrum can be used in a way that maximises value to society as a whole.

The prime objective of the Act, and of spectrum management generally, is to maximise the value of spectrum to New Zealand society. In order to achieve this objective, it is necessary to:

- Ensure that spectrum is allocated to the uses that New Zealand society values the most;
- Provide sufficient exclusivity of use to enhance the value of particular parts of the spectrum;
- Provide for security of tenure to encourage spectrum-related investment;
- Provide a reliable means to resolve interference problems that minimises transaction costs, both within and outside New Zealand's legal jurisdiction; and
- Ensure that the concentration of control of the spectrum does not unnecessarily inhibit competition.

Background to the Act

Prior to the enactment of the Act, the radio spectrum was controlled solely by administrative means. This worked well when entry into telecommunications and broadcasting markets was restricted and the range and number of users was small. Reform of these markets prompted a re-examination of what approach to spectrum management would be best suited to a more open and commercial environment in which there would be competing demands for spectrum and a corresponding need to promote more economic efficiency in spectrum usage.

The resulting Act was based on the analysis prepared for the Ministry by overseas consultants, with considerable refinement to reflect the Ministry's practical experience in administering the spectrum and the needs of principal users.

The Act provides both for the continuation of an administrative-based licensing regime and for a regime for spectrum management based on tradeable rights. The process for deciding which spectrum should be brought into the rights-based regime, and the means by which it should subsequently be allocated, are not dealt with specifically in the Act.

The scheme of spectrum rights enshrined in the Act is based on the view that privately-held spectrum rights that meet the above objectives are, for most commercial uses, the best way to ensure that spectrum use maximises value to society as a whole. These rights can be freely traded.

When the Act was enacted, this scheme of tradeable, long-term spectrum rights was unique by world standards. A number of other countries have since emulated this approach.

Role of the Ministry of Economic Development

The Ministry has a number of roles relating to the operation of the Act. The Ministry:

- Administers radio apparatus licences pursuant to Part XIII of the Act - the greater part of the spectrum continues to be managed in this way;
- Advises the Government on what spectrum should be subject to the spectrum rights regime and, where relevant, the means by which it should be allocated to private interests;
- Allocates spectrum on the basis decided by the Government;
- Acts as a manager in respect of some spectrum registered under the Act;
- Represents New Zealand's spectrum interests in meetings of the International Telecommunication Union (ITU) and other international bodies;
- In some cases, acts informally as a facilitator and/or mediator in disputes between private right holders over interference matters; and
- Advises the Government on competition law.

Maximising value

The Government's preferred means of allocating spectrum to its most valuable uses is through the price mechanism. This allows spectrum to be allocated to those who are prepared to pay the highest price, reflecting the value that they place on the spectrum as an input to providing services. After the initial allocation of spectrum by the Government, rights can be freely traded. It is a matter for the spectrum managers concerned whether or not to trade their rights and, if so, on what basis.

The Act is designed to minimise high administration, enforcement and transaction costs on the parties involved which could otherwise detract from, or completely mitigate, the benefits of a price-based allocative mechanism. The definition of rights are defined and the management of interference is fundamental to this end.

At the same time, it is necessary to provide sufficient flexibility to allow spectrum to be utilised in a manner which is conducive to the up-take of new technology and changing demand patterns. Rights incorporating a high degree of exclusive use may, for example, constrain the value of spectrum use, not maximise it. In addition, rights should, as far as is practicable, be defined in a manner that does not predetermine or limit the range of the services for which they must be used.

Finding an appropriate balance between these objectives is a central issue under the current regime.

The maximum value of spectrum to society can be reduced when a firm in a dominant position in the market finds it profitable not to use the spectrum productively or in response to changes in technology. The Act provides for the application of provisions in the Commerce Act to the acquisition of spectrum where this would strengthen or result in a dominant position in the market. Provisions of the Commerce Act also apply in circumstances where a firm misuses its dominant position in the market.

Public policy objectives

The Act recognises that there are some spectrum uses where the price mechanism or the facility to trade spectrum rights is not appropriate. These include:

- Services provided in the public interest, e.g. defence, security, and safety of life such as radionavigation services;
- Services which are subject to international treaty; and
- Services to meet the Government's social policy objectives in areas such as public broadcasting and Maori broadcasting.

The reasons for withholding spectrum for such purposes may change over time, and consequently it is appropriate that allocations be reviewed from time to time. In addition, there may be alternative means of satisfying public policy objectives.

Treatment of incumbents

An underlying theme is competitive neutrality. In part, this requires that existing users of spectrum are placed on a similar footing to new entrants in terms of facing the scarcity value of the spectrum. In addition, it requires that a moratorium be placed on the allocation of unused spectrum until that spectrum can be moved into the rights regime. The Act is intended to provide for a fair and orderly means by which spectrum can be moved from administrative control into a rights-based system.

International obligations

The Government has certain obligations at international law relating to spectrum utilisation in New Zealand. The Act makes specific reference to some of these obligations, the effect of which is to constitute them in New Zealand's national law. Regardless of whether New Zealand's international obligations have been incorporated into its national law, it is intended that the Act be consistent with, and promote compliance of, these obligations.