

Digital Switchover Legislation Discussion Paper

1. Switchover instrument: an instrument, made pursuant to legislation, which allows a decision-maker to sign off on the switchover for a particular area.
2. Timing: switchover dates should be able to be brought back as well as put forward.
3. Smaller switchover areas: for full flexibility, the switchover instrument could be allowed to be made down to the individual transmitter rather than only by licence area.
4. Decision-maker: At present, the Governor-General is technically the decision-maker. This could be changed to either the Minister or Australian Communications and Media Authority (ACMA). If the Minister is the decision-maker, should this power be able to be delegated to an officer in the Department?

Background

There are 3,707 analog TV transmitters causing at least 205,000 tonnes of greenhouse gasses to be produced each year.

There are 950 digital TV transmitters causing at least 124,000 tonnes of carbon dioxide to be produced each year.

At least 195,000 tonnes of CO₂/year is being wasted due to the analog simulcast.

Network	t CO ₂ /year	Network	t CO ₂ /year
Ten Metro	1,800	Seven Affiliates	31,500
ABC	26,400	Seven Metro	1,900
SBS	58,200	Nine Affiliates	34,300
Ten Affiliates	38,700	Nine Metro	2,000

Metro is Brisbane, Sydney, Melbourne, Adelaide & Perth.

Affiliates are Canberra, Hobart & country areas.

These figures do not add up because there are digital only networks such as Tasmania's TDT (10 programming).

Note: A digital TV transmitter produces half the quantity of CO₂, half the electricity when compared to an analog TV transmitter covering the same area, provided it remains in the same frequency band.

Decision maker

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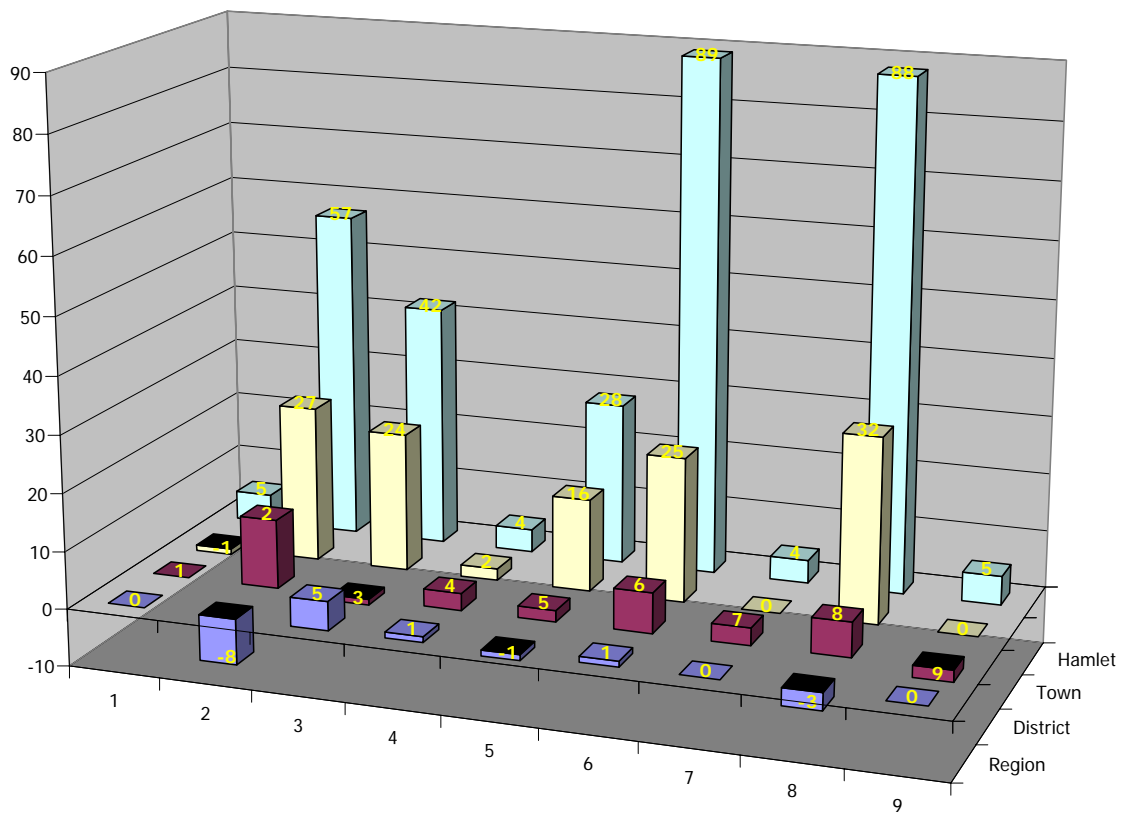
I think that the Minister alone should be the decision maker.

- When the broadcasters think they have produced equal quality coverage with digital and analog, they should notify the ACMA and advertise this fact.
- The advertisement should contain an example of poor digital signals and the equivalent analog signal and ask for locations of poorer digital coverage. The audience can complain of unequal coverage within 3 months of the broadcaster's decision.
- The advertising should also include the analog switch off date (12 months from this date) and the need to buy either a digital TV or a Set Top Box.
- The ACMA should be the arbiter by measuring the strength & signal quality in the complainant's area.
- The Decision Maker will order the analog switch off the date set above when the complaints have been resolved.
- **The Decision Maker should also have the power to keep the installation program of all networks on time and synchronized so that one network cannot delay the switchover.**

Timing

- Timing: switchover dates should be able to be brought back as well as put forward.

To achieve the shortest possible analog simulcast time the digital installation program must be finished. This will minimise the simulcast costs and the generation of considerable amounts of excess Carbon Dioxide.



Transmitters yet to be installed.

All community coverage area sized transmitters (<50 W_{ERP} UHF, 20 W_{ERP} VHF) have been omitted.

1 = TEN Metro, 2 = ABC, 3 = SBS, 4 = Misc, 5 = TEN affiliate,

6 = SEVEN affiliate, 7 = SEVEN Metro, 8 = NINE affiliate, 9 = NINE Metro.

Timing Issues

1. Tell the manufacturers, importers and the broadcasters that **HD MPEG4 (1920 x 1080 progressive @ 25 frame/s) transmissions will commence from all transmitters for all programs, as the final act of the switchover in December 2013. This needs to be done now and the Broadcast Services Act amended where necessary. Foxtel® HD+ and New Zealand broadcasters are using this system now.**
2. From 1st July 2009 all new devices which receive Digital TV signals must be able to decode either DVB-T2 (Terrestrial) or DVB-S2 Satellite, which are HD progressive signals.
3. *Switch off the following analog transmitters, which have duplicate UHF analog transmitters in NSW. In these areas commercial TV has been using UHF for many years. This should occur immediately.*

ABHN5A Newcastle, WIN3 Wollongong, ABSN0 Cooma Town, ABN2 and NEN0 Tamworth City. (Mt Soma covers Tamworth City).

3. Smaller switchover areas: for full flexibility, the switchover instrument could be allowed to be made down to the individual transmitter rather than only by licence area.

Current state of conversion

TV Licence areas are average % which have digital transmitters);

M ^t Isa 0 %	East Victoria 10 % 10 affiliate only	Adelaide 92 %	Remote Central & Eastern Aust 0 % Impaja & 7 affiliate
Regional Qld 63 %	Regional Vic 42 % 7 & 9 affiliates for these areas	Spencer Gulf 13 %	Remote & Regional WA 2 % 9/10 affiliate only
Brisbane 86 %	West Victoria 43 % 10 affiliate only	Kalgoorlie 0 % 7 affiliate only	Western Zone 0 % 7 affiliate only. Needs to include Kalgoorlie, SW & G ^t Southern and Geraldton to match Remote and Regional WA
Northern NSW 20 %	Mildura/Sunraysia 100 %	SW & Great Southern 0 % 7 affiliate only	
Broken Hill 100 %	Melbourne 100 %	Perth 100 %	

Sydney 100 %	Tasmania 19 %	Geraldton 0 % 7 affiliate only	
Southern NSW 27 %	SE SA 25 %	Darwin 39 %	
MIA 50 %	Riverland 25 %		

<3 commercial licencees % includes extensions of new digital only networks. Do not include retransmitters which are not owned by broadcasters.

http://www.acma.gov.au/webwr/assets/main/lib100052/lic021_commercial_tv_broadcasting_licencees.pdf

To make the above table meaningful, Regional Victoria should be split into East and West, so that all networks on each site are considered equally. Similarly Remote and Regional WA should have Geraldton, SW, G^t Southern and Kalgoorlie split and the remainder put into the Western Zone.

High powered, regional coverage area transmitters

The table below shows the only regional coverage transmitters, which are yet to get a digital sibling (They are will have effective radiating powers of 200 kW or above UHF or 50 kW or above VHF.) These transmitters frequently supply the signals for lower powered repeaters over the air.

Region	Transmitter (Network)	Region	Transmitter (Network)
Upper Namoi, NSW	NBN37 (NBN)	South West, WA	SSW30 (GWN-Prime)
Central Western Slopes, NSW	CBN41 (Prime)		WIN37 (WIN)
Murray Valley, Vic	BCV65 (Macquarie)		? 40 (GWN/WIN)
	WIN60 (WIN)	Great South West	SSW12 (GWN-Prime)
Central Agricultural, WA	SSW51 (GWN-Prime)		WIN32 (WIN)
	? 30 (GWN/WIN)		? 36 (GWN/WIN)

Metropolitan Switchover in December 2009

The following transmitters are yet to get digital siblings;

High/medium power community broadcasters, *Community funded* transmitters

Brisbane: *Kooralbyn, Maroon, Mount Alford, Rathdowney, Toogoolawah*, Qld, require all networks.

Sydney: *Woronora and Patonga*, require all networks.

Melbourne: *Anglesea & Airey's Inlet, Gisborne, Healesville, Lorne, Monbulk, Newtown (Geelong), Wye River*, require all networks (Lorne has ABC).

Adelaide: Elizabeth South (has ABS & SBS), *Golden Grove*, Marino (Hallett Cove) (has ABS) *Myponga, Peterhead*. Require all networks except the exceptions

Outer Adelaide: *Angaston, Cape Jervis, Carrickalinga, Cudlee Creek, Gumeracha, Normaville Yankalilla* require all Adelaide networks

Murraylands: *Mannum, Swan Reach, Truro* fed from Loxton main transmitters

Spencer Gulf: *Eudunda* fed via Burra translators.

Perth: *Lancelin, Maryville, Perth East, Seabird*

Hobart: Acton, Rokeby. Tasmania (Acton has ABC & SBS)

Darwin: Darwin North, NT

The suggested installation sequence should be:

1. Install the 12 transmitters left in the high powered transmitter program outlined above. This will then allow the measurement of the coverage areas from the main transmitters in the areas translators already exist. This may alter the translator's coverage areas or eliminate the need entirely.
2. Install the translators required for fill in listed above for Brisbane, Sydney, Melbourne, Greater Hobart, Adelaide, Greater Adelaide and Perth. Since nearly all of these translators are self funded, it would be better that there is no simulcast time, use a forewarned switchover date. This will be cheaper for the users to buy STBs, which they will have to do anyway, and eliminate the duplication of transmitters.
3. Install and provide programs for the low powered translators in the Murray Lands & Eudunda SA. Since all of these translators are self funded, it would be better that there is no simulcast time, use a forewarned switchover date. This will be cheaper for the users to buy STBs which they will have to do anyway, and eliminate the duplication of transmitters.

4. Provide a switchover or simulcasting for the following transmitters

NSW: ABN5A Armidale North, NBN1 Murrurundi, NEN1 Walcha.

Qld: ABTQ5A Bowen, TNQ2 Gordonvale, TNQ5A Herberton, TNQ5A Mission Beach, ABNQ2 Mt Garnet, ABQ5A Wandoan

WA: ABW5A Leeman

This will then eliminate the need for any Band 1 & 2 antennas & wideband masthead amplifiers in Australia. **This will mean these types of antennas and wideband amplifiers can cease to be manufactured & sold. Then there will be more reliable digital reception from the new equipment.** All other transmitters on channels 0 – 5A will all have a digital alternative.

5. Define the specifications for remote area direct to home satellite coverage. This is necessary because all of the transmitters below use the home satellite signals of transmitter input signals.

All of WA (outside Perth) Note: WA South West is the 17th largest statistical division population which includes the metropolitan areas.

All of NT (outside Darwin)

SA: Northern & Eyre

NSW: Far West

Qld: North West, South West, Central West

This specification should be DVB-S2 which uses MPEG4 compression to allow all viewers the ability to see all networks in HD for a similar subsidised cost as is at present. Currently they only have access to 2 commercial networks. This will make free to air TV have the same picture/sound quality as pay TV such as Foxtel[®] HD+ and NZ satellite free to air and Pay TV.

This will require domestic satellite receivers to be replaced with HD receivers capable of HD MPEG4 signals. It will also affect all low powered community funded repeaters. This will be the second replacement of receivers which is required by improvements of technology. The dishes will not require modification.

Simulcasting is expensive to government subsidies for satellite time. The receivers should be swapped on a particular day because the same dish installation is used for existing and the new signals.

All of the above should be completed before December 2009

6. Complete the installation program set out in the appendix.

This list lists the Australian Bureau of Statistics Statistical Division in descending order of population. So each division should be completed in descending order. This includes all translators and repeaters in each division.

As each area is completed, the signals feeding all the transmitters must be digital from the playout centre to the transmitter output.

To minimise the generation of Carbon Dioxide and simulcast costs this part of the installation program should be completed as fast as possible.

7. Note when the installations in areas where there is only 2 Commercial networks available the third network should be added in MPEG4 as an incentive to change. Then 12 months later all signals in that area change to MPEG4 and HD is radiated instead of SD.

Publicity of the switchover

The switchover timetable should be readily and publically available on the ACMA website with links to this site from each network's digital page on their websites. Antenna manufacturers, installers, electronics retailers and hardware stores need this information to order in advance, the antennas (& masthead amplifiers) required for the channels to be installed in each area along with STBs and digital receivers.

The time table should be kept up to date by notifications from the networks to the ACMA. Maps should accompany this information to indicate the statistical divisions and the transmitter sites being installed along with the channels to be used and the signal polarisation. See appendix 2

Content and captioning on commercial television broadcaster multichannels

Ensure that all high powered transmitters are fed with digital signals from the studio source. This will ensure that each network will be able to radiate at least one SD digital signal. The limitation on HD signals is the ability to insert local advertising & programming into the many regional feeds of affiliates is limited by the cost of encoders. Since HD MPEG2 encoders are expensive, the money would be better spent as part of the cost of an HD MPEG4 encoder for each outlet.

The final act of the digital switchover should be the act of switching off SD simulcasting and replacing it with a pair of HD MPEG4 programs. **It has always been a huge waste to have had to transmit an HD and SD version of each program on each network. All HD set top boxes can & have been able to output a conventional SD signal.**

High Definition TV Quota.

This requirement of 1040 hours/year (2 h 50 min 52 s /day) is a current requirement. The number of full HD receiver/displays in the audience is increasing and will eventually become universal on all but small displays.

Currently there are lots of up-conversions of programs, some of which are from PAL composite sources rather than the original images being recorded in true HD. These up-conversions are very obvious on a large screen.

I propose that the current quota should not be required for affiliates. A new quota for all should **start** 1st January 2014 and require 1278 h/year (3 ½ h/day) per program stream. This will ensure that the viewer is getting their money's worth from their expensive displays.

Digital Simulcasting

The average viewer finds this confusing.

- For example the ABC has logical channel numbers of 2, 20, 21 all with the same programming. You can't watch the "HD" channel continuously because they do not have an HD encoder at each studio centre.
- The metro commercial stations are a little better; however there are still multiple duplicates.
- **What we need in the end is just a pair of different programs per broadcaster both radiated in HD. It will be up to the viewer as to what definition they watch the images in.**

Conclusion

The ultimate aim is to provide the highest picture & sound quality with the maximum program choice with the minimum of Carbon Dioxide produced

Alan Hughes, TVOCP, MBKSTS

Appendix 1

State	Statistical Division	Population	%
NSW	Sydney	4,119,189	20.7%
Vic	Melbourne	3,592,592	18.1%
Qld	Brisbane	1,763,129	8.9%
WA	Perth	1,445,073	7.3%
SA	Adelaide	1,105,839	5.6%
NSW	Hunter	589,239	3.0%
Qld	Gold Coast	482,327	2.4%
NSW	Illawarra	394,213	2.0%
NSW	Canberra	323,058	1.6%
NSW	Mid-North Coast	284,679	1.4%
Qld	Sunshine Coast	276,267	1.4%
Vic	Barwon	259,015	1.3%
Qld	Wide Bay - Burnett	254,661	1.3%
Qld	Far North	231,053	1.2%
NSW	Richmond-Tweed	219,328	1.1%
Qld	Darling Downs	213,755	1.1%
WA	South West	207,344	1.0%
Tas	Greater Hobart	200,524	1.0%
NSW	South Eastern	197,944	1.0%
Qld	Northern	196,670	1.0%
Vic	Goulburn	195,239	1.0%
Qld	Fitzroy	188,403	0.9%
NSW	Northern	172,396	0.9%
NSW	Central West	170,901	0.9%
Vic	Loddon	168,841	0.9%
Vic	Gippsland	159,485	0.8%
Qld	Mackay	150,177	0.8%
NSW	Murrumbidgee	147,294	0.7%
Vic	Central Highlands	142,210	0.7%
Tas	Northern	133,932	0.7%
SA	Outer Adelaide	123,697	0.6%
NSW	North Western	111,231	0.6%
NSW	Murray	110,523	0.6%
Tas	Mersey-Lyell	106,129	0.5%
NT	Darwin	105,989	0.5%
Vic	Western District	98,855	0.5%
Vic	Mallee	88,600	0.4%

State	Statistical Division	Population	%
NT	Northern Territory - Balance	84,906	0.4%
Vic	East Gippsland	80,114	0.4%
SA	Northern	75,932	0.4%
Qld	West Moreton	68,629	0.3%
SA	Murray Lands	66,805	0.3%
SA	South East	62,216	0.3%
WA	Central	57,436	0.3%
WA	Lower Great Southern	52,591	0.3%
WA	South Eastern	51,893	0.3%
WA	Midlands	50,413	0.3%
Vic	Wimmera	48,440	0.2%
SA	Yorke & Lower North	43,878	0.2%
WA	Pilbara	41,002	0.2%
Tas	Southern	34,929	0.2%
SA	Eyre	33,342	0.2%
Qld	North West	30,944	0.2%
WA	Kimberley	29,299	0.1%
Qld	South West	24,782	0.1%
NSW	Far West	22,032	0.1%
WA	Upper Great Southern	17,715	0.1%
Vic	Ovens-Murray	15,993	0.1%
Qld	Central West	10,852	0.1%
NSW	ACT - balance	976	0.0%
Australia			19,855,288

<http://www.censusdata.abs.gov.au/ABSNavigation/prenav/LocationMap?newgeography=Statistical+Division&collection=Census&period=2006&areacode=&geography=&method=&productlabel=&producttype=&topic=&navmapdisplayed=true&javascript=true&breadcrumb=LWL&topholder=>

Non bold text is satellite fed from the Remote area satellite service from Optus Aurora.