2 COST COMPENSATION METHODOLOGY

In this section, we set out our method for determining the appropriate level of compensation to cover the efficiently incurred capital and operational costs which 2rn, and ultimately RTÉ, would incur as a result of migrating Digital Terrestrial Television (DTT) from the 700 MHz band. This method is designed to identify the net costs that would be incurred as a result of 700 MHz migration, taking into account that in the coming years some investment in the DTT network would be made regardless of the migration. Therefore, the appropriate method should provide sufficient compensation such that RTÉ is indifferent between migrating from the 700 MHz band (with compensation) and staying in the band (without compensation).

2.1 Description of methodology

Repurposing the 700 MHz band will require that current DTT users migrate from the band. As a result of this required migration, these users are likely to incur costs that they would not otherwise incur. The current users include 2rn, a DTT service provider. ComReg intends to compensate RTÉ for the costs that 2m would incur, as those costs would flow through to RTÉ.

In developing our method for determining the appropriate level of compensation, we sought to ensure that the amount payable would leave 2rn indifferent between migration and the counterfactual of no migration. In addition, ComReg also wishes to ensure that current tariffs in the Broadcasting Markets A and B would not be not altered by the impact of the additional costs of 700 MHz migration.

We have therefore designed an approach which would compensate RTÉ for the reasonable costs which it would ultimately incur as a result of 700 MHz migration, depending on whether:

- the cost is exclusively a direct result of migration (i.e. it would never have been incurred absent migration), in which case costs are fully compensated; or
- 2rn has to bring forward investments it otherwise would have made at a later time (i.e. once its existing assets became fully depreciated), in which case the compensation covers the costs incurred by 2rn in making this investment earlier than would otherwise be necessary.
- The value related to the existing assets which become stranded will continue to be recovered from the tariff model (as if the migration had not taken place), until the existing assets would have been fully depreciated. This is to ensure that existing tariffs in Market A and B are not affected by the migration.

This method is applied to the following cost categories:

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6 Market A is described as wholesale access to national terrestrial broadcasts: transmission services in which 2rn is designated as having SMP.

6 Market B is described as wholesale access to DTT (Digital Terrestrial Television) Multiplexing Services in which RTÉ is designated as having SMP.
Transmission equipment

- Antennas and structures
- Network and distribution
- Project and resourcing

A contingency rate of 15% is applied to the sum of these migration costs to cover uncertainties and unforeseeable elements. To derive the total recommended compensation, non-recoverable VAT (NRV) is included at a rate of 13.34% and in the event that 2rn should engage in simulcast\textsuperscript{10}, associated costs are eligible to be compensated.

While the methodology in this section describes the approach to forecasting the economic costs that 2rn would incur as a result of the migration, we note that, inevitably, the actual costs that are eventually incurred may be different. Amongst other things, the actual costs figure will be dependent on the outcome of a competitive tender process to be conducted by 2rn, for the provision of the required equipment and related services. Therefore, ComReg proposes to phase the compensation payments to reflect the phased incurrences of the costs. This means that a final balancing payment should ensure that RTÉ is not over-compensated. This is explained in section 5.4.

Frontier notes that the costs at issue would initially be incurred by 2rn, the DTT network operator, but that those costs would flow through to and would ultimately be incurred by RTÉ, the DTT service provider. The compensation at issue would therefore be paid to RTÉ, and not to 2rn. This report was prepared on this understanding and all sections herein should be interpreted as such, even where the entity referred to is 2rn.

2.1.1 Costs which are exclusively a direct result of migration

Following the methodology set out above, our estimate of the compensation payable assumes that full compensation is applied for incremental operating expenditures (opex) and capital expenditures (capex) that would result from 700 MHz migration, where these costs would never have been incurred absent such migration (i.e. the costs are a direct result of the migration).

For those costs, the compensation level is set equal to the forecast cost. The capex is compensated for the period of asset life for each piece of equipment. Following this point (when assets installed which are exclusively a direct result of migration reach the end of their asset life - i.e. from around 2030) we assume that asset costs will be recovered via tariffs.

The list of costs eligible for full compensation is provided in Figure 1.

\textsuperscript{10} Simulcast describes the simultaneous broadcasting of services on channels in both the 700 MHz band and in remainder of the UHF band below the 700 MHz band to which the services will migrate to. 2rn’s rationale for the use of a simulcast is explained in section 3.2.
<table>
<thead>
<tr>
<th>Category</th>
<th>Compensation rationale</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission Equipment</td>
<td>Costs eligible for full compensation where costs relate to new sites.</td>
<td>Transposers for new site, Transposer combiners for new site, Combiner re-tuning</td>
</tr>
<tr>
<td>Antennas &amp; Structures</td>
<td>Costs fully recompensed, as aerials are specific to the 700 band</td>
<td>Aerial replacement, Surveys (Structures and Cabins), Structural Strengthening, New site development (2 Sites), Antenna Modification &amp; Retunes</td>
</tr>
<tr>
<td>Network &amp; Distribution</td>
<td>Costs fully recompened as costs relate to the migration (and would not have been incurred absent migration)</td>
<td>Fibre links to distribution network for resilience, SFN Configuration, RBR, Backup Network, Off-air Feeds/Antennas/Filter/Re -Transmitters</td>
</tr>
<tr>
<td>Project &amp; Resourcing</td>
<td>Costs fully recompened as costs relate to the migration (and would not have been incurred absent migration)</td>
<td>Information for local swichovers, Consultant Project Management, Site Rigging and Engineering, Project Engineers, Frequency Planning and Reception Investigation, Environmental, Health and Safety</td>
</tr>
</tbody>
</table>

*Source: Frontier*

### 2.1.2 Costs relating to the early replacement of assets

If we assume that 700 MHz migration would take place using simulcast, then this would require the early replacement of some of 2m’s assets, primarily transmitters or transposers. We assume that it would be reasonable to compensate for the economic cost of having to bring forward investment in these assets. However, because 2m would, in any event, have incurred costs in having to replace these assets (once they had reached the end of their economic life) it would not be appropriate to compensate for the full value of these assets. To do so would result in over-compensation. Instead, we calculate the appropriate level of compensation as the shortfall between (a) the investment costs, and (b) the allowed revenues recovered in relation to the asset (from the tariff model). Given that we have imposed the constraint that current tariffs should not be affected by the 700 MHz migration, we assume that those tariffs will continue to be based on existing assets until those assets have reached the end of their asset life (in 2025). From that point in time, 2m would begin recovering its investment costs incurred from 700 MHz migration, from the tariff.

Therefore, the compensation payable for early replacement of assets is the cost of those assets at installation (we assume 2018) minus the expected revenues associated with those assets (from 2025 until the end of the assets’ lives).

In summary:
costs are to be compensated over a proportion of the asset life only (i.e. the
proportion of value which reflects the period after installation (2018) up to
when assets would have been replaced (2025)); and

the tariff model is constructed such that allowed revenues are based on the
weighted average cost of capital (WACC, 8.11%) applied to the NBV of the
capital employed. Plus the depreciation charge in each year. The NBV
decreases at a constant rate of depreciation over the asset life (13.33 years for
DTT equipment).

Following 2025 (the years in which 2rn would replace its existing assets if there
had been no 700 MHz migration) 2rn will recover the remainder of the value of its
assets from the tariff model, in the normal way and until the assets reach the end
of their useful life.

Compensation for costs related to the early replacement of assets is equal to the
net present value of the sum of:

- accumulated depreciation between when the assets were installed and when
  existing assets would have fully depreciated; and,
- allowed return on capital employed between when the assets were installed
  and when existing assets would have fully depreciated.

More specifically, the compensation level is calculated using the following
equation:

\[
\text{net present value of compensation} = \sum_{i=1}^{N} \frac{P_i}{(1 + \text{wacc})^i} \quad (1)
\]

where:

- \( P_i \) is payment \( i \) in the schedule of annual depreciation in year \( i \) plus return on
capital employed in year \( i \)
- \( \text{wacc} \) is the weighted average cost of capital
- \( i \) is equal to the payment number
- \( N \) is equal to the total number of payments
- \( t_i \) is the year of payment (i.e. the number of years after asset installation up to
  when the existing assets would have been fully depreciated)

Migration is assumed to take place in 2018 and 2rn is assumed to incur all
investment costs in at the start of that year.
3 ANALYSIS OF 2rn’s MIGRATION STRATEGY

2rn has proposed a 700 MHz migration strategy based on simulcast of the old and the new frequencies for a time period, indicatively four to six months. This would allow the gradual migration of households that might face some reception issues with aerials when retuning TV channels. Such a period of simulcast would allow these households (who generally may have poorly installed grouped aerials, or grouped aerials at the margins of the reception area) sufficient time to test whether their aerials are sufficient to continue to receive a signal, post migration, and to make any necessary adjustments.

In this section:
- we first consider the impact of poorly installed grouped aerials on reception in Ireland, and the implications on 700 MHz migration; and
- we then consider the rationale for the key investment decisions relating to 700 MHz migration.

For each we have assessed 2rn’s view and then considered this in developing the appropriate compensation estimate.

3.1 The impact of poorly installed grouped aerials on reception in Ireland, and the implications on migration

UHF TV reception aerials can be classified as “grouped aerials” or “wideband aerials”. Grouped aerials are optimised to receive signals from a specific narrow frequency range, whereas wideband aerials receive all UHF TV channels.

The different antenna groups are provided below.

Figure 2  Different antenna groups

<table>
<thead>
<tr>
<th>Aerial Group</th>
<th>UHF Channel</th>
<th>UHF Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>21 – 37</td>
<td>470 – 606 MHz</td>
</tr>
<tr>
<td>Group B</td>
<td>35 – 53</td>
<td>582 – 734 MHz</td>
</tr>
<tr>
<td>Group C/D</td>
<td>48 – 68</td>
<td>694 – 854 MHz</td>
</tr>
<tr>
<td>Group E</td>
<td>35 – 68</td>
<td>582 – 854 MHz</td>
</tr>
<tr>
<td>Group K</td>
<td>21 – 48</td>
<td>470 – 694 MHz</td>
</tr>
<tr>
<td>Group W (wideband)</td>
<td>21 – 68</td>
<td>470 – 854 MHz</td>
</tr>
<tr>
<td>Group T (wideband)</td>
<td>21 – 60</td>
<td>470 – 790 MHz</td>
</tr>
</tbody>
</table>


So, for example, a household using a band C/D antenna, optimised for reception of the 700/800 MHz band, will receive a weaker signal for a similar TV broadcast station transmitting on, for example, a group A frequency.

The UHF band is divided into number of “channels” each of 8 MHz bandwidth.