MEETING CONSUMERS' CONNECTIVITY NEEDS

Demand for data connectivity in Ireland is increasing

37% p/a Fixed data demand

60% p/a Mobile data demand

Increase in data demand on fixed and mobile networks

There are a number of drivers of increased data demand including:

1 Devices are more sophisticated

only used for voice and SMS

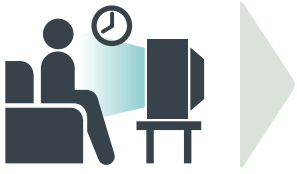
Powerful processors, greater memory, high res display, cameras ... all drive mobile data

2 Consumers use diverse applications

3 Consumers use broadband networks to watch content that was traditionally transmitted over terrestrial broadcast networks

NETFLIX

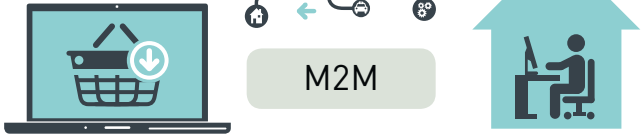
amazon prime video



In 2012, users spent 186 mins on average per day watching TV

In 2018, users spent 166 mins on average per day watching live TV and increased watching Video on Demand

4 Commercial applications also drive demand



We require connectivity for all our devices where we live, work, travel and spend our leisure.

The Irish Government has a programme to roll out high-speed fixed broadband to all households in Ireland

540,000

Households mostly in rural areas that will have access to fibre broadband as a result of the NBP

Once complete the NBP will mean that:

- **All Irish households will have fast fixed broadband**
- **Support "native Wi-Fi calling" in the home**
- **Will lower costs of mobile backhaul**

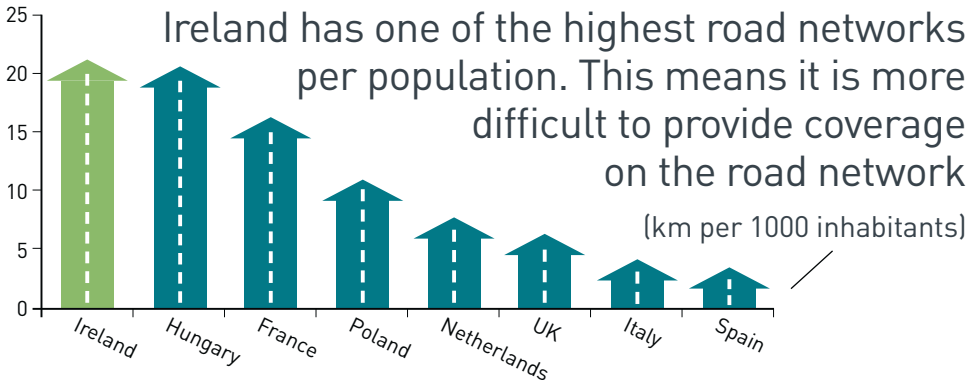
There are some key challenges in providing mobile connectivity

1. Ireland is a predominantly rural country

76% of Ireland is covered by either farmland or forestry

2. Ireland's road density is twice the EU average

Ireland has one of the highest road networks per population. This means it is more difficult to provide coverage on the road network



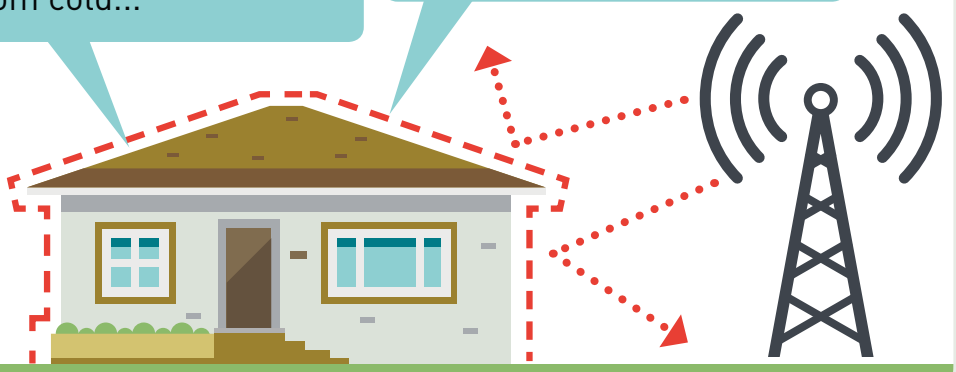
3. Providing connectivity in rural locations is challenging:

1. Long distance from the cell site
2. Environmental barriers like hills, trees, etc
3. High proportion of one off houses in Ireland

4. Modern environmentally friendly building materials reduces in-door mobile coverage

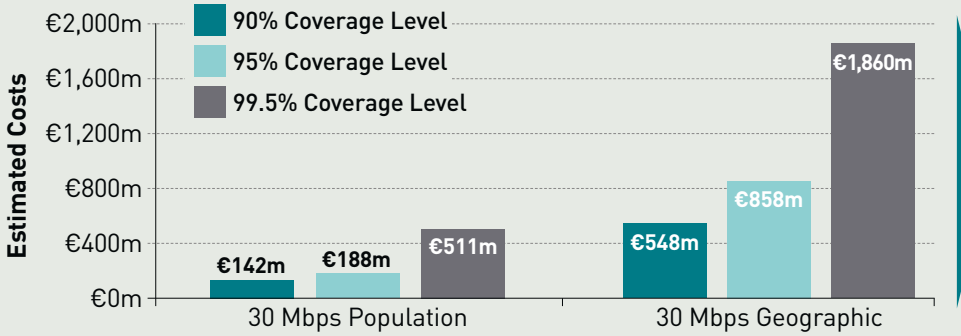
Modern insulation means that heat is kept in and houses are insulated from cold...

...however, these materials also prevent radio waves from penetrating



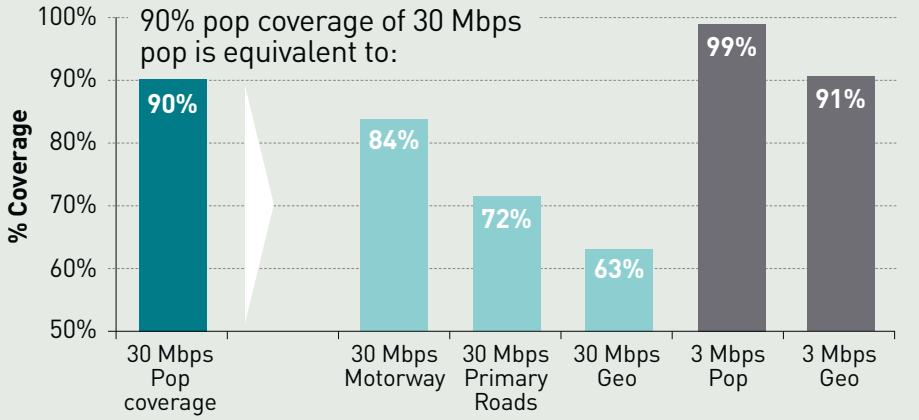
5. Mobile handset performance varies significantly by device

Costs of increasing mobile connectivity to very sparsely populated areas are high



Targeting mobile coverage of 30 Mbps to at least 90% population is likely to be commercially attractive.

The 30 Mbps service modelled in these studies is a mobile service and thus is not the same level of service outlined in the NBP service requirements which are notably higher



Extending mobile coverage of 30 Mbps to 90% population provides significant incidental coverage improvements.

All stakeholders can take actions which in combination will improve consumers connectivity outcomes

Government

Government of Ireland

The **NBP** will provide high-speed fixed broadband to around 540k homes in areas that will not otherwise have access to fast broadband.

The **Mobile Phone and Broadband Taskforce** will support policy changes – such as on planning or "black spots"

Consumers

Use of **mobile repeaters**

Use in-home fixed **Wi-Fi calling**

Use a **handset with enhanced signal performance**

Network operators and device manufacturers

Network operators and devices manufacturers should **support features such as Wi-Fi calling.**

Provide **point of sale information** on handset performance.

Improved Connectivity

ComReg

Continue to **provide information** (eg mobile handset signal performance)

Regulatory changes (eg supporting the use of repeaters)

Support new spectrum releases (eg for 5G)

Set licence conditions in new spectrum releases