



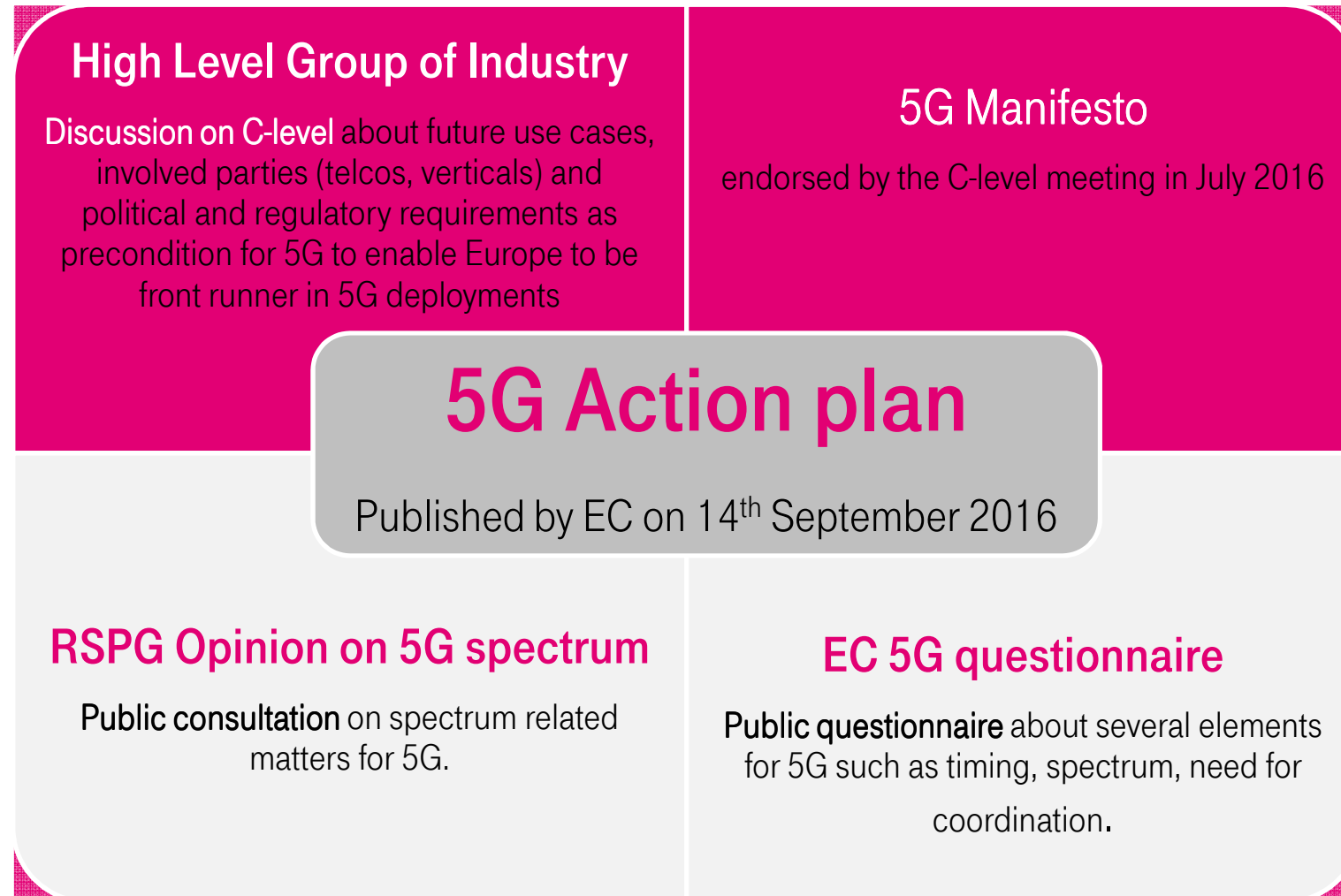
KEY DEMANDS & TIMING IN MACEDONIA

Introduction of 5G future technology

International Regulatory Conference, May 2017

Makedonski Telekom AD Skopje

5G ACTION PLAN, inputs and key messages



Network operators will not invest in new infrastructures if they do not see clear prospects for a solid demand and regulatory conditions that make the investment worthwhile.

KEY REGULATORY DEMANDS TO ENABLE DEPLOYMENT OF NEW TECHNOLOGIES (5G)

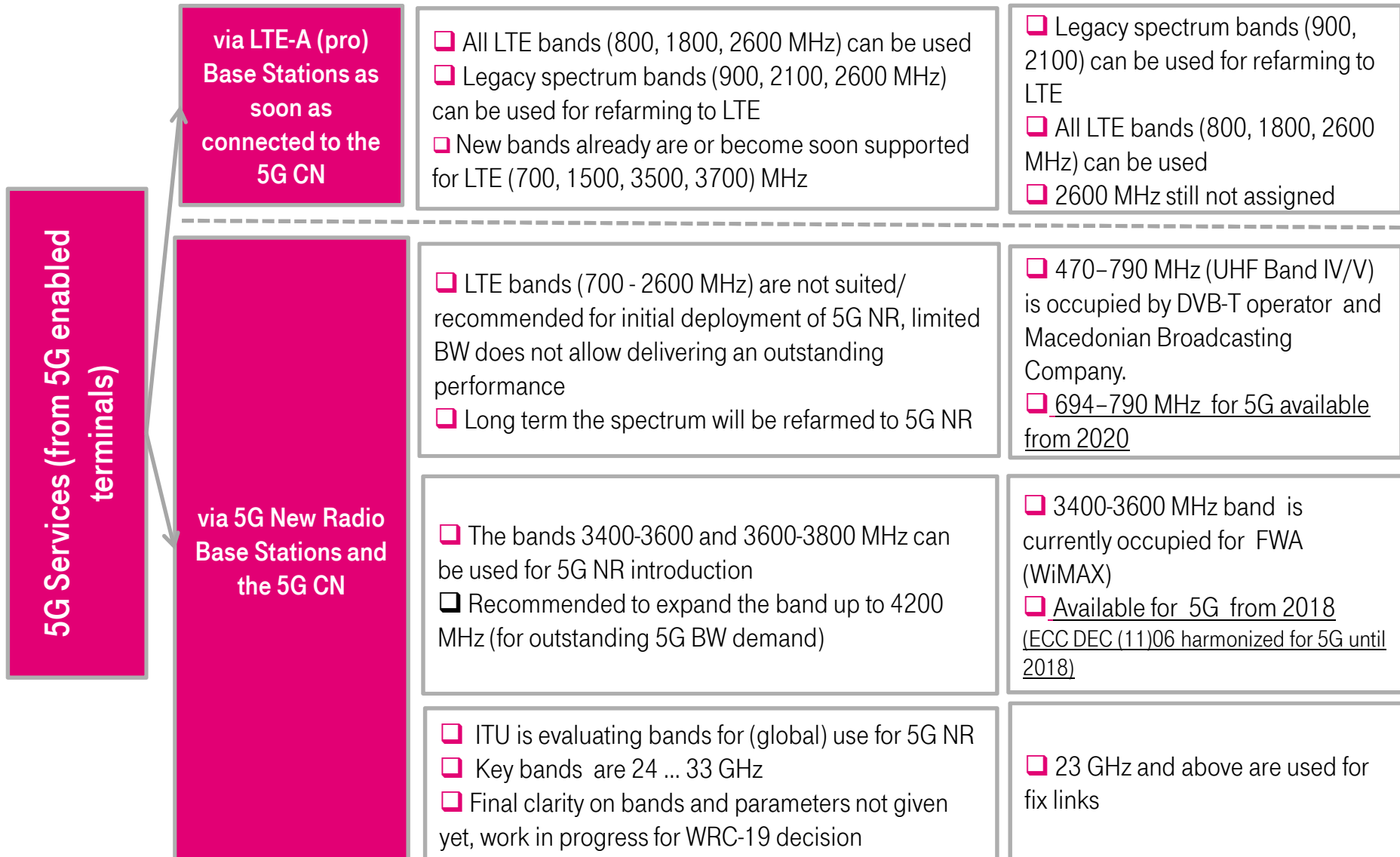
Topic	Main objectives	Key demands
Auction design	<ul style="list-style-type: none"> Market driven and efficient spectrum allocation Leave budget for rapid network upgrades/rollout 	<ul style="list-style-type: none"> Provide safeguards against auction designs primarily aimed at maximising auction revenues
Availability	<ul style="list-style-type: none"> Cope with expected increase in data traffic 	<ul style="list-style-type: none"> To ensure timely availability of additional spectrum resources Synchronise awarding procedures in the region
License terms and fees	<ul style="list-style-type: none"> Better planning certainty with increased terms Limit complexity and costs for MNOs Avoidance of excessive spectrum fees 	<ul style="list-style-type: none"> Increased minimum license durations (30+ years) or switch to indefinite licenses (like e.g. in the UK) Standardize license terms (coverage, technical neutrality) Annual fees to be leveraged with EU average fees
Usage conditions	<ul style="list-style-type: none"> Allow spectrum trading and sharing 	<ul style="list-style-type: none"> Least restrictive spectrum usage conditions possible More flexibility of spectrum trading and sharing of spectrum and networks-change in the legislation
Cross border coordination	<ul style="list-style-type: none"> Avoid interference problems between technologies 	<ul style="list-style-type: none"> Remove all harmful interference that already exist (interference on 800 MHz) Agreement for cross border coordination should be sign for coexistence of technologies, according to EU regulation



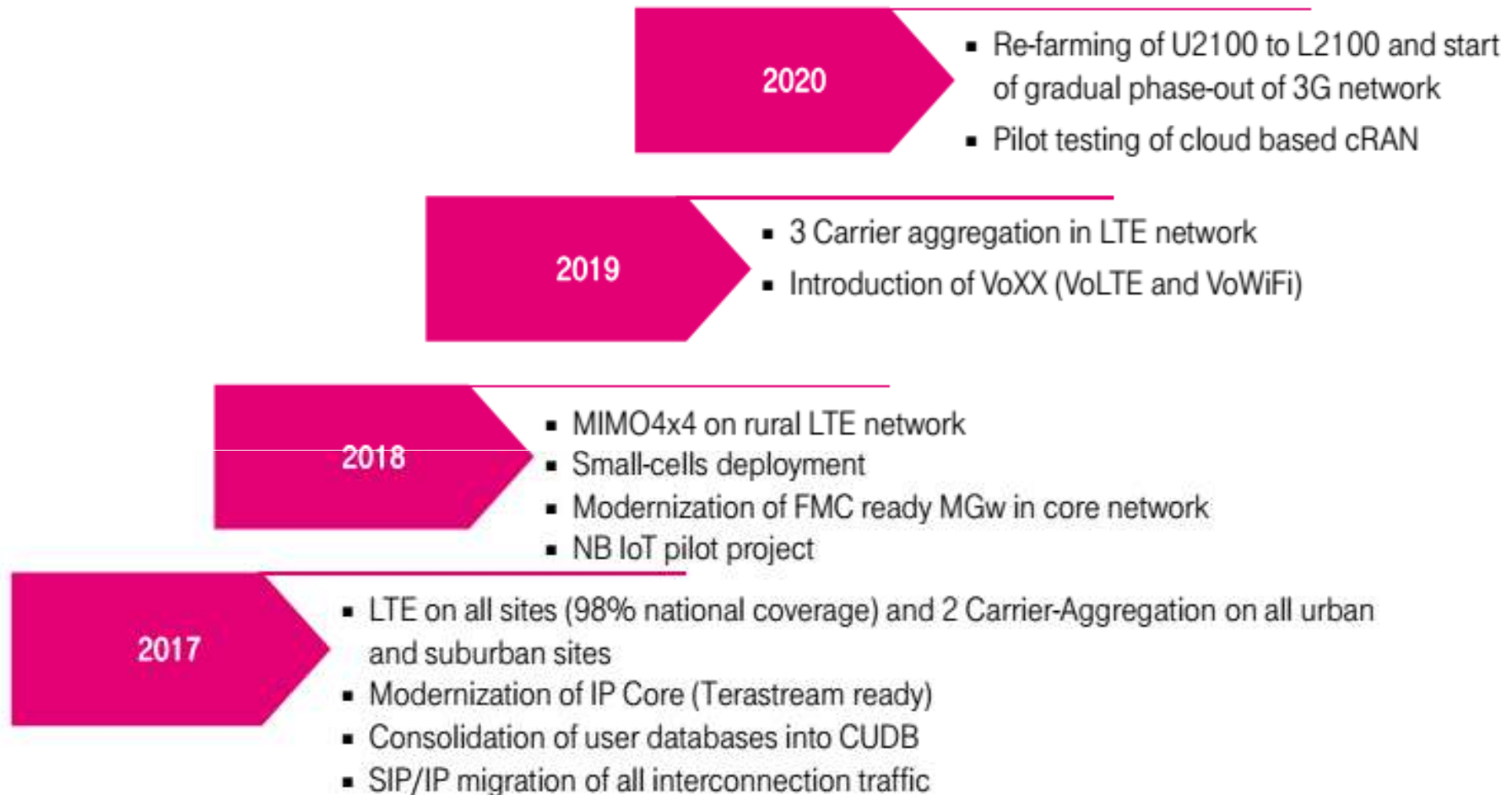
SPECTRUM FOR 5G SERVICE

Spectrum for 5G services in Macedonia

Recommendation



KEY DEVELOPMENT PROJECTS 2017-2020



- Gradual re-farming of all available spectrum toward LTE
- Gradual phase-out of legacy technologies beyond 2020, and introduction of 5G technology

BACKUP SLIDE

MOBILE DATA TRAFFIC TREND IN MKT NETWORK

