



# **Re-assignment of Spectrum Used for the Provision of Third Generation (“3G”) Mobile Services**

**Telecommunications Users and  
Consumers Advisory Committee**  
21 November 2013

# Communications Authority (“CA”)’s Decision : Hybrid Option

- ✚ Existing assignment term for the 3G Spectrum will expire in October 2016
- ✚ Four incumbent 3G operators, viz.
  - CSL Limited
  - Hong Kong Telecommunications (HKT) Limited
  - Hutchison Telephone Company Limited
  - SmarTone Mobile Communications Limited
- ✚ Each incumbent to be re-assigned two-thirds of the 3G Spectrum
- ✚ Remaining 3G Spectrum to be re-assigned by the CA through auction
- ✚ New 15-year assignment term to commence in 2016 and end in 2031

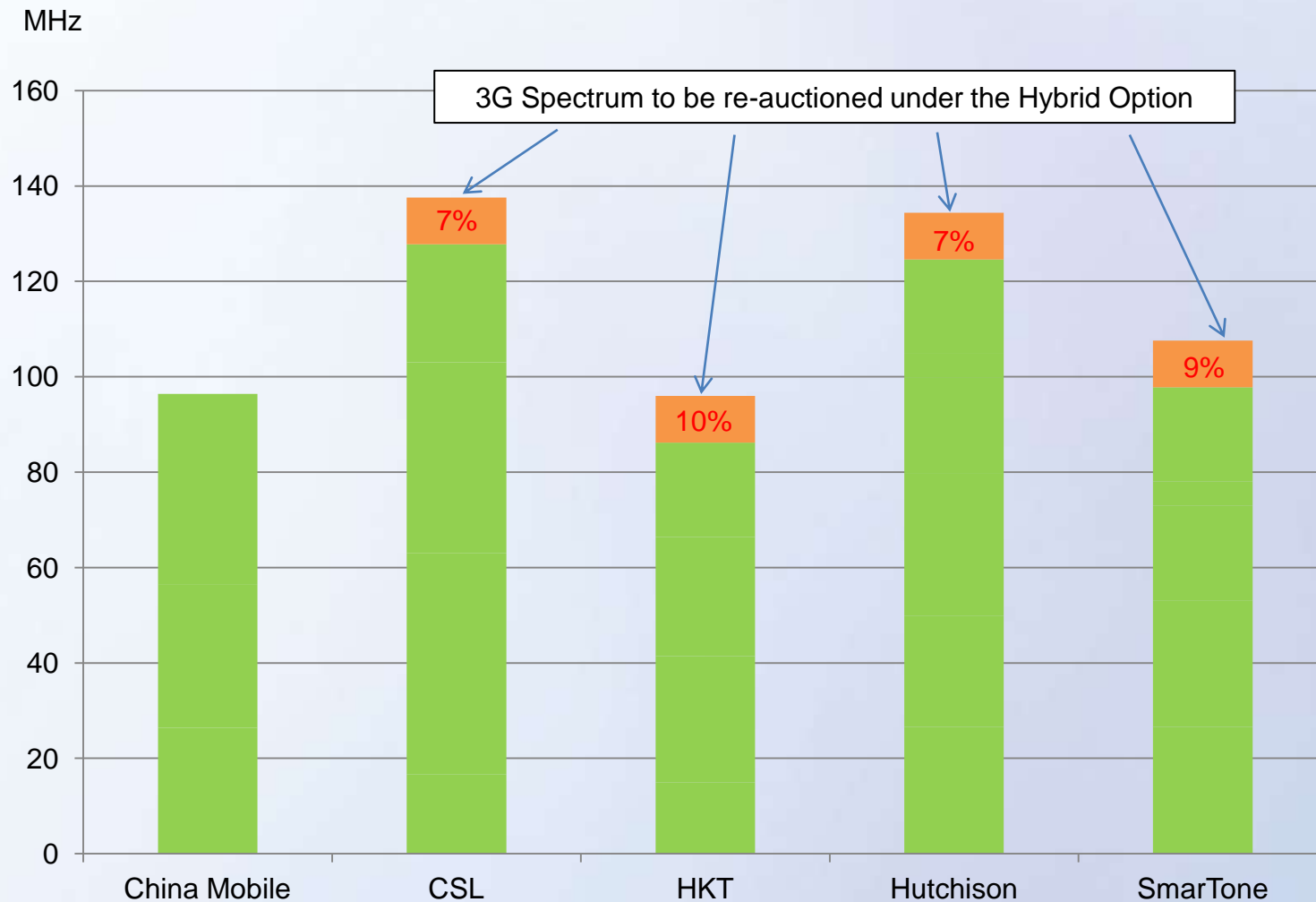
# Options Proposed in the Public Consultation

- ✚ Option 1 : Administratively-assigned approach  
Right of first refusal for the incumbent 3G operators to be re-assigned all the 3G Spectrum
- ✚ Option 2 : Full-fledged market-based approach  
Re-auction all the 3G Spectrum
- ✚ Option 3 : Hybrid approach  
Right of first refusal for the incumbent 3G operators to be re-assigned parts of the 3G Spectrum (i.e. Right-of-first-refusal Spectrum), with the Re-auctioned Spectrum to be re-assigned through auction

# Market Overview

- ✚ A total of 572 MHz of spectrum assigned for the provision of public mobile services, which includes 120 MHz of 3G Spectrum
- ✚ Spectrum holdings by the individual mobile network operators (“MNOs”) range from the least of 96 MHz to the largest of 138 MHz
- ✚ Under the hybrid option, the Re-auctioned Spectrum amounts to only 7% - 10% of the incumbent 3G operators’ total spectrum holdings

# Distribution of Spectrum Assigned to the MNOs



# 3G & 4G Networks

	3G Services	4G Services
Amount of spectrum	173 MHz	260 MHz
Number of subscribers	9.4 million	1.6 million
Share of subscribers in the total number of mobile data users	84%	14%

- + Mobile data services can be provided on both the 3G and 4G networks
- + There is ample capacity currently on the 4G networks
- + 3G networks already congested at certain hotspots during busy hours, e.g. MTR, Mongkok and Causeway Bay

# Use of Spectrum by MNOs within the MTR Areas



- ✚ Main reasons for congested mobile services along the MTR lines and at the stations :
  - Incumbent 3G operators rely only on a small amount of 2G spectrum refarmed for the provision of 4G services, without using the large amount of 4G spectrum on hand
- ✚ They should immediately utilise the 4G spectrum efficiently, in order to mitigate congestion on the 3G networks



# How to Mitigate Congestion on the 3G Networks?

- + MNOs should immediately utilise the 4G spectrum efficiently
- + Incumbent 3G operators should speed up the migration of 3G customers to the 4G networks
  - Introduce 3G/4G integrated mobile data service plans
  - Provide promotional offers for subscribers to purchase 4G handsets



# Example : “3G Room” & “4G Room” at “Telecoms Restaurant”

“Telecoms Restaurant” has both 3G Room and 4G Room

**3G Room**



**4G Room**

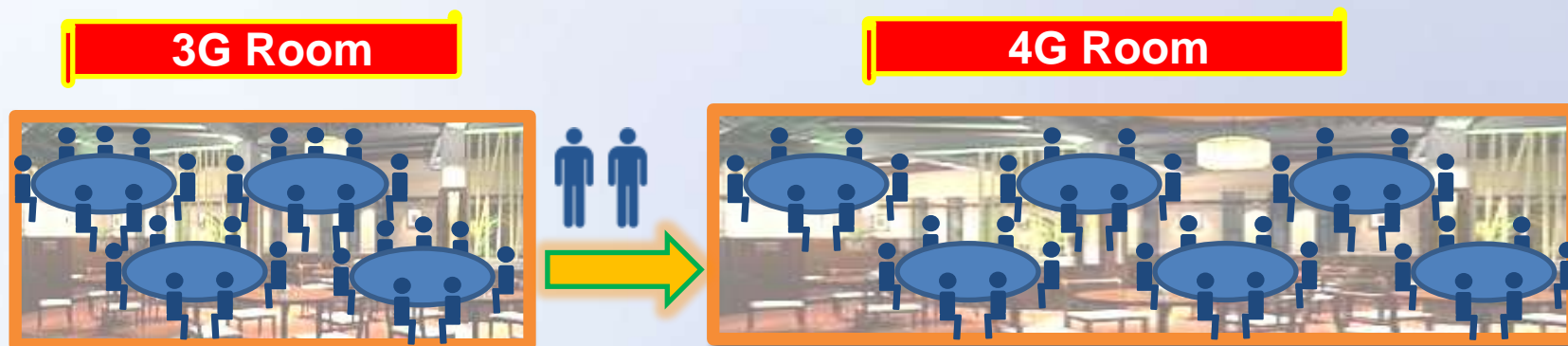


Many customers at the 3G Room, very congested during busy hours

Fewer customers at the larger 4G Room, very spacious at all times

# Example : “3G Room” & “4G Room” at “Telecoms Restaurant”

Owner of the restaurant can invite customers at the 3G Room to move to the 4G Room in order to solve the congestion problem at the 3G Room, and to allow customers to enjoy quality services



# Justifications and Factors Considered

- ✚ Factors considered by the CA in formulating its decision :
  - Relevant provisions under the Telecommunications Ordinance and the Communications Authority Ordinance
  - Policy in spectrum management as stated in the Radio Spectrum Policy Framework
  - Submissions received in the two rounds of public consultation lasting for seven months altogether
  - Findings of the consultancy study commissioned by the Government
  - Policy views of the Secretary for Commerce and Economic Development
  - Independent assessment of the CA

# Competing Demands for the 3G Spectrum

- ✚ According to the comments received in the two rounds of public consultation, the CA is of the view that there are indeed competing demands for the 3G Spectrum
- ✚ In accordance with the Radio Spectrum Policy Framework, a market-based approach should be adopted to put to open auction all the 3G Spectrum

# Overriding Public Policy Reasons

- ✦ Auction outcome highly uncertain under the full-fledged market-based approach
- ✦ If any of the incumbent 3G operators is not assigned with any 3G Spectrum it originally holds, service quality on its network would be severely affected. There could also be a degradation or even a loss of 3G service coverage at certain indoor areas, such as within the MTR areas, HKCEC, shopping malls, etc.
- ✦ Having considered the concern of the incumbent 3G operators, the CA shares the view of the SCED : there exists an overriding public policy reason for the CA to deviate from the full-fledged market-based approach

# Comparison between the Full-fledged Administratively-assigned Option and the Hybrid Option Based on the Four Spectrum Re-assignment Objectives

- ✚ Ensuring customer service continuity
- ✚ Efficient spectrum utilisation
- ✚ Promotion of effective competition
- ✚ Encouragement of investment and promotion of innovative services

# Comparison between Hybrid Option and Full-fledged Administratively-assigned Option (1)

- ✚ Ensuring customer service continuity
  - Service continuity and service quality can be maintained under both options
  - Under the hybrid option, if the incumbent 3G operators do not acquire any 3G Spectrum through auction, they could effectively mitigate the impact on service quality by implementing appropriate mitigation measures, for example through speeding up the migration of their 3G customers to the 4G networks
- ✚ In commercial reality, MNOs would strive to maximise customer retention. Thus no customer churning is expected among the MNOs due to re-assignment of the 3G Spectrum

# Comparison between Hybrid Option and Full-fledged Administratively-assigned Option (2)

## ✚ Efficient spectrum utilisation

- The full-fledged administratively-assigned option is like a perpetual spectrum assignment, which provides less incentive for, and exerts less pressure upon, the incumbent 3G operators to efficiently utilise the spectrum
- The hybrid option, through re-auctioning parts of the 3G Spectrum, can assign the spectrum to the MNOs which are able to put it to the most efficient use and hence derive the maximum economic benefits from it
- The hybrid option provides an opportunity for MNOs to critically review their overall effectiveness in utilising the spectrum
- The hybrid option provides an opportunity for the incumbent 3G operators to acquire a contiguous spectrum block of wider bandwidth, thereby facilitating their application of the more advanced 4G technology



# Comparison between Hybrid Option and Full-fledged Administratively-assigned Option (3)

## + Promotion of effective competition

- The hybrid option provides an opportunity for new entrants to enter the Hong Kong mobile market through bidding for the 3G Spectrum
- Incumbent 3G operators could also bid for the 3G Spectrum in the open auction based on their commercial considerations, thereby facilitating their needs in business development and strengthening their competitiveness

# Comparison between Hybrid Option and Full-fledged Administratively-assigned Option (4)

- ✚ Encouragement of investment and promotion of innovative services
  - Under the hybrid option, new 3G Spectrum assignees will put in investment to roll out new network infrastructure
  - The incumbent 3G operators, by exercising the right of first refusal to be re-assigned two-thirds of the 3G Spectrum, have to continue to invest in the 3G networks to maintain services
  - For the incumbent 3G operators which eventually do not acquire any 3G Spectrum from the open auction, they are likely to invest to upgrade the network capacity in order to offset the effect stemming from a reduction in spectrum holding
  - If they acquire a contiguous spectrum block of wider bandwidth through option, they could introduce more innovative services

# Conclusion : Comparison of the Three Options

	Full-fledged Market-based	Full-fledged Administratively-assigned	Hybrid Approach
Ensuring customer service continuity	✗	✓	✓
Efficient spectrum utilisation	✓	✗	✓
Promotion of effective competition	✓	✗	✓
Encouragement of investment & promotion of innovative services	✓	✗	✓

# Arrangements for Spectrum Auction

- ✚ Auction expected to be conducted in the fourth quarter of 2014
- ✚ Open for bidding by all interested parties
- ✚ Spectrum cap : 40 MHz
  - For an incumbent 3G operator which has exercised the right of first refusal to be assigned about 20 MHz of 3G Spectrum that it currently holds, it can bid for not more than 20 MHz of spectrum
  - New entrants to the 1.9 – 2.2 GHz band can bid for not more than 40 MHz of spectrum

**Thank You**