Appendix D: Initial Commitment Technical Guide

1 Introduction

In the Initial Commitment System, an incumbent will be able to select among three options for its Initial Commitment.[1] An incumbent can choose to: (1) have its licenses modified based on the Commission's proposed reconfiguration of its license holdings; (2) have its licenses modified based on an acceptable alternative reconfiguration that the incumbent proposes, provided that it satisfies certain specified conditions; or (3) commit to relinquish its licenses in exchange for an incentive payment and the ability to bid for new licenses.

In the Initial Commitment System, an incumbent that selects Option 1 will also choose whether to keep or relinquish any modified license for a partial PEA. An incumbent selecting Option 2 will indicate its alternative reconfiguration in the Initial Commitment System, including the one PEA in which it wants to have the holdings equivalent to less than a full 100 megahertz block, and whether it wants to keep or relinquish that partial block. An incumbent that chooses Option 3, committing to relinquish all its existing spectrum usage rights, during Round Zero will also be able to redistribute its weighted MHz-pops across the PEAs in which its updated aggregated holdings are equivalent to a partial PEA through the Initial Commitment System.

This technical guide details calculations related to submitting an alternative reconfiguration (Section 2) and to reallocating the incumbent's updated aggregated holdings (Section 3) to supplement the descriptions of those processes in the Initial 39 GHz Reconfiguration Public Notice.[2] The examples that appear in this document include fictitious data and are for illustrative purposes only.

2 Alternative Reconfigurations Proposed by Incumbents

If the incumbent elects to modify its holdings according to an alternative reconfiguration under Option 2, it submits its alternative reconfiguration as follows:

First, for all but one of the PEAs where it has weighted MHz-pops quantities equivalent to a partial block, the incumbent chooses to round its updated partial holdings in the PEA *either* down to the greatest integer less than or equal to the incumbent's updated holdings *or* up to the least integer greater than or equal to the incumbent's updated holdings. For example, if the incumbent's updated holdings are 2.5674 blocks in a PEA, the incumbent can either round the quantity down to 2 blocks or round it up to 3 blocks.

Once the incumbent has rounded its partial holdings down or up to the nearest integer in all but one of the PEAs in which it has partial quantities, the system will calculate the weighted MHz-pops for the remaining PEA. Specifically, if j is the remaining PEA, the system will calculate the weighted MHz-pops for PEA j as follows:

[1] Formally, it is the incumbent's Initial Commitment Representative that will select an option in the Initial Commitment System.

[2] *See generally, Notice of Initial 39 GHz Reconfiguration Procedures, et al.*, GN Docket No. 14-177, AU Docket No. 19-59, Public Notice, DA 19-196 (WTB/OEA Mar. 20, 2019) (*Initial 39 GHz Reconfiguration Procedures Public Notice*).

$$\tilde{m}_j = \sum_{i=1}^{416} m_i - \sum_{i=1,\ldots,416; i \neq j}^{416} w_i \cdot r_i$$

Where:

m_i denotes the incumbent's updated weighted MHz-pops in PEA i.

w_i denotes the weighted MHz-pops of PEA i per block.

r_i denotes the number of blocks in PEA i in the alternative reconfiguration.

(Note that r_i is defined for all $i \neq j$ and is an integer for all those PEAs.)

In what follows, we use $\lfloor x \rfloor$ to denote the greatest integer that is less than or equal to x and $\lceil x \rceil$ to denote the least integer that is greater than or equal to x. Thus, $\lfloor \tilde{m}_j / w_j \rfloor$ is the greatest integer less than or equal to the incumbent's updated holdings, and $\lceil \tilde{m}_j / w_j \rceil$ is the least integer greater than or equal to the incumbent's updated holdings.

The incumbent's weighted MHz-pops for PEA j that is calculated according to the equation above is valid if:

$$\left\lfloor \frac{m_j}{w_j} \right\rfloor \leq \frac{\tilde{m}_j}{w_j} \leq \left\lceil \frac{m_j}{w_j} \right\rceil$$

If the calculated $\tilde{m}_j$ is valid, the incumbent's number of blocks for PEA j in the alternative reconfiguration is calculated as $\tilde{m}_j / w_j$, rounded to 4 decimal places. Then, the incumbent can choose whether to keep or relinquish the partial block in PEA j (if any) and then submit its alternative reconfiguration. As in the case of the FCC-proposed reconfiguration, if the partial block exceeds the *de minimis* threshold, then the incumbent can either keep a full block or relinquish the partial.

If the calculated $\tilde{m}_j$ is not valid, this will be due to one of the following reasons:

Case 1: $\frac{\tilde{m}_j}{w_j} < \left\lfloor \frac{m_j}{w_j} \right\rfloor$. This means that, based on the incumbent's choices so far, its total weighted MHz-pops across all PEAs would exceed its updated total weighted MHz-pops across all PEAs. In this case, the incumbent needs to round down (instead of up) in some PEAs in order to get a valid alternative reconfiguration.

Case 2: $\frac{\tilde{m}_j}{w_j} > \left\lceil \frac{m_j}{w_j} \right\rceil$. This means that, based on the incumbent's choices so far, the incumbent would not account for all of its weighted MHz-pops in the alternative reconfiguration. In this case, the incumbent needs to round up (instead of down) in some PEAs in order to get a valid alternative reconfiguration.

Example 1: Consider an incumbent with updated holdings in three PEAs that has selected Option 2. The weighted MHz-pops and the incumbent's updated holdings in each PEA are shown in the table below.

PEA	PEA Weighted MHz-Pops per Block	Updated Holdings	
		Blocks (rounded to 4 decimal places)	Weighted MHz-Pops
075	272,241,100	1.9020	517,798,800.00
300	14,437,600	1.1826	17,074,600.00
315	12,796,300	3.3126	42,388,900.00
		Sum	**577,262,300.00**

The number of blocks for the incumbent's updated holdings in a PEA shown in the table above is calculated as the weighted MHz-pops of the incumbent's updated holdings in the PEA divided by the PEA weighted MHz-pops per block, rounded to 4 decimal places.

Case 1: Suppose that the incumbent rounds its quantity in PEA075 up to 2 blocks and rounds its quantity in PEA300 up to 2 blocks. Then, the system will calculate the incumbent's weighted MHz-pops for the remaining PEA (PEA315) as

$$\tilde{m}_j = 577,262,300 - 2*272,241,100 - 2*14,437,600 = 3,904,900$$

This is not valid because it corresponds to 0.3052 blocks in PEA315; however, the incumbent's updated holdings were equivalent to 3.3126 blocks in PEA315 and thus the incumbent cannot have less than 3 blocks in that PEA in an alternative reconfiguration.

Case 2: Suppose that the incumbent rounds its quantity in PEA075 down to 1 block and rounds its quantity in PEA315 up to 4 blocks. Then, the system will calculate the incumbent's weighted MHz-pops for the remaining PEA (PEA300) as

$$\tilde{m}_j = 577,262,300 - 272,241,100 - 4*12,796,300 = 253,836,000$$

This is not valid because it corresponds to 17.5816 blocks in PEA300; however, the incumbent's updated holdings were equivalent to 1.1826 blocks in PEA300 and thus the incumbent cannot have more than 2 blocks in that PEA in an alternative reconfiguration.

Case 3: Suppose that the incumbent rounds its quantity in PEA300 down to 1 block and rounds its quantity in PEA315 down to 3 blocks. Then, the system will calculate the incumbent's weighted MHz-pops for the remaining PEA (PEA075) as

$$\tilde{m}_j = 577,262,300 - 14,437,600 - 3*12,796,300 = 524,435,800$$

This is a valid reconfiguration because it corresponds to 1.9264 blocks in PEA075, and for PEA075:

$$\left\lfloor \frac{m_j}{w_j} \right\rfloor = 1 \text{ and } \left\lceil \frac{m_j}{w_j} \right\rceil = 2$$

3 Reallocating an Incumbent's Updated Holdings (Round Zero)

An incumbent that relinquishes all its licenses (Option 3) has the additional option of redistributing its updated holdings across all PEAs where it has partial holdings.

The redistributed holdings are valid if the following conditions are satisfied:

(i) The incumbent's total weighted MHz-pops of the redistributed holdings is equal to the total weighted MHz-pops of its updated holdings; and

(ii) For every PEA, the holdings can only be reduced down to the greatest integer less than or equal to the incumbent's updated holdings or increased up to the least integer greater than or equal to the incumbent's updated holdings.

Note that in an incumbent's redistributed holdings there can be non-integer quantities in multiple PEAs.

To redistribute its holdings, the incumbent enters a quantity (number of blocks) with up to 4 decimal places for each PEA where it has non-integer updated holdings. The quantity entered for a PEA must be less than or equal to the greatest integer less than or equal to the incumbent's updated holdings in that PEA *and* less than or equal to the least integer greater than or equal to the incumbent's updated holdings in that PEA.

The system will allow the incumbent to submit quantities for redistributed holdings as long as the total weighted MHz-pops corresponding to those quantities is less than or equal to the total weighted MHz-pops of the incumbent's updated holdings.

If the total weighted MHz-pops corresponding to quantities entered by the incumbent are less than the total weighted MHz-pops of the incumbent's updated holdings, then the system will assign the remaining weighted MHz-pops to PEAs, starting with the lowest numbered PEA in which the incumbent has partial block holdings, subject to condition (ii) above.

An incumbent's weighted MHz-pops in a PEA are rounded to the nearest two decimal places. The system will show the incumbent's weighted MHz-pops for both its updated holdings and its redistributed holdings with two decimal places, as shown in the tables of the following examples. The number of blocks for the incumbent's updated holdings in a PEA shown in the tables for these examples is calculated as the weighted MHz-pops of the incumbent's updated holdings in the PEA divided by the PEA weighted MHz-pops per block, rounded to 4 decimal places.

Example 2: Consider an incumbent with updated holdings in three PEAs who has selected Option 3. The weighted MHz-pops and the incumbent's updated holdings in each PEA are shown in the table below.

PEA	PEA Weighted MHz-Pops per Block	Updated Holdings		Redistributed Holdings	
		Blocks (rounded to 4 decimal places)	Weighted MHz-Pops	Blocks (entered by incumbent)	Weighted MHz-Pops
075	272,241,100	1.9020	517,798,800.00	1.9116	520,416,086.76
300	14,437,600	1.1826	17,074,600.00	1.0000	14,437,600.00
315	12,796,300	3.0000	38,388,900.00	3.0000	38,388,900.00
		Sum	**573,262,300.00**	Sum	**573,242,586.76**

Note that the incumbent cannot change its quantity in PEA315 because its updated holdings were equivalent to an integer number of blocks in that PEA.

The weighted MHz-pops of the updated holdings exceed the weighted MHz-pops of the redistributed holdings by 573,262,300.00 - 573,242,586.76 = 19,713.24. This remainder will be assigned to PEA075, the lowest numbered PEA where the incumbent's quantity can be increased.

Then, the resulting weighted MHz-pops after the initial commitment will be as follows:

PEA	Relinquishments in Weighted MHz-Pops	Block Equivalents (rounded to 4 decimal places)
075	520,435,800.00	1.9117
300	14,437,600.00	1.0000
315	38,388,900.00	3.0000
Sum	**573,262,300.00**	

The incumbent's incentive payment will be determined based on its relinquishments in weighted MHz-pops.

Example 3: Consider an incumbent with updated holdings in four PEAs who selected Option 3. The weighted MHz-pops and the incumbent's updated holdings in each PEA are shown in the table below.

PEA	PEA Weighted MHz-Pops per Block	Updated Holdings		Redistributed Holdings	
		Blocks (rounded to 4 decimal places)	Weighted MHz-Pops	Blocks (entered by incumbent)	Weighted MHz-Pops
075	272,241,100	1.9755	537,798,800.00	2.0000	544,482,200.00
100	254,421,200	0.9639	245,231,400.00	0.5000	127,210,600.00
125	189,302,200	1.0876	205,891,400.00	1.0000	189,302,200.00
300	14,437,600	1.1826	17,074,600.00	1.1000	15,881,360.00
		Sum	**1,005,996,200.00**	Sum	**876,876,360.00**

The weighted MHz-pops of the updated holdings exceed the weighted MHz-pops of the redistributed holdings by 1,005,996,200.00 – 876,876,360.00 = 129,119,840.00. To assign this remainder:

- The system will first consider whether it can assign any of the remainder to PEA075, but that is not possible because the incumbent already has 2 full blocks in PEA075.
- The system will then consider whether it can assign any of the remainder to PEA100. There are enough remaining weighted MHz-pops to increase the quantity in PEA100 to 1 block (the maximum amount for that PEA) which corresponds to weighted MHz-pops of 254,421,200. After this increase in PEA100, the remainder MHz-pops is 1,909,240.

- The remaining leftover quantity is assigned to PEA125.

Then, the resulting weighted MHz-pops after the initial commitment will be as follows:

PEA	Relinquishments in Weighted MHz-Pops	Block Equivalents (rounded to 4 decimal places)
075	544,482,200.00	2.0000
100	254,421,200.00	1.0000
125	191,211,440.00	1.0101
300	15,881,360.00	1.1000
Sum	**1,005,996,200.00**	

The incumbent's incentive payment will be determined based on its relinquishments in weighted MHz-pops.