

# **APPLYING SPECTRUM PRICING TO THE AERONAUTICAL SECTOR – A SECOND CONSULTATION**

## **A RESPONSE FROM THE LIGHT AIRCRAFT ASSOCIATION AND THE GENERAL AVIATION ALLIANCE**

### **INTRODUCTION**

1.0. This response from the Light Aircraft Association (LAA) has been adopted as a common position by the members of the General Aviation Alliance (GA Alliance) who provided input and comment in its preparation. The LAA represents some 8,000 members directly and the GA Alliance 72,000 subscription paying members belonging to 9 aviation organisations that cover the majority of the sector. Many individual members have been involved in the debate on these issues and have contributed to this paper.

1.2. It is disappointing that you have decided to consult once again on applying AIP to aeronautical spectrum. Because it was so complicated and potentially damaging to aviation we had to expend considerable resources on dealing with the previous consultation. It was clear then that AIP would not improve efficiency and it would have been outside your authority to impose. This consultation is equally complex, introducing as it does additional report material and setting out a somewhat different logic. Nonetheless many of the issues we raised last time still stand as they were mentioned but not addressed in your review of the first consultation.

1.3. The fundamental proposition you put forward now is that there is excess demand for aeronautical VHF spectrum and AIP will cause it to be managed more effectively by allocating it to those who value it most thereby maximising the benefit to society. For AIP to be relevant there must be excess demand and an alternative use; the spectrum must be managed more effectively as a result and value to society must be maximised. Our response is built around these propositions looking in turn at excess demand, alternative use, effective management and value to society. We then examine some of your data before summarising our position but we begin by considering the overarching requirement for safety in aviation.

### **SAFETY**

2.0. Before we examine your proposition it is important to understand the safety issues which you acknowledge but either argue or dismiss in the consultation. Aviation safety is not a single definable product which can be shown to be present or absent, rather it is made up of many small components of which communications is but one. However, communication is an enabling factor in the majority of safety areas and is therefore very important, particularly in commercial operations. When proposing to change something in aviation, we need to carry out a cost and safety benefit analysis and consider if safety will be maintained, improved or reduced and at what price. Generally, Society will not tolerate a change which trades safety for revenue and this is recognised in the historic way we have managed aviation regulation: if a proposed change cannot be shown to increase safety or at least be safety neutral, it is not taken forward. This conservative approach has served the

Industry well for many years and as VHF com is the key to safety and regularity in civil aviation, Society will demand that any change that may be made to spectrum management should not reduce safety. You now propose to force a change that would allegedly increase revenue for the benefit of Society (which Society as individuals would have to pay for) but which has the potential to make flying less safe to the extent that you expect the CAA to introduce secondary legislation to stop any changes that result. This is not a sound safety case and it is not one which Society should be expected to support.

2.1. You open the consultation with the example of the emergency services which pay AIP to use business radio and liken them to aviation implying that it too should pay. However this comparison is not valid as the safety considerations are fundamentally different:

2.2.1. If an ambulance is dispatched without access to radio communications it may not be able to carry out its function as effectively but the ambulance itself is no less safe as it travels through the busy streets of a city.

2.2.2. However an aircraft travelling through similarly busy airspace over that same city but unable to use its radio is, of itself, an increased risk to life and property and thus to society.

There are circumstances where aeronautical radio communications are appropriate and the CAA manages that to ensure a proper balance of safety throughout aviation. But your AIP proposal would remove that safety management function from the CAA and give it up to market forces because that "will have a beneficial impact on the economy". You offer no analysis to support that statement which we do not find at all persuasive.

## SUPPLY AND DEMAND

3.0. You note that in para 7.67 that where the supply of spectrum is sufficient to meet demand, there is little to be gained in efficiency terms from setting fees other than to recover some or all of your relevant administrative costs. Throughout your document you refer to existing excess demand and a shortage of aeronautical spectrum leading to opportunity costs (eg para 1.9). By frequent repetition this statement seems to gain some authority but nowhere, either in your document, in its supporting reports or in previous studies such as the Cave reports, is this excess demand quantified or indeed proven to exist or likely to exist at some time in the future. You say in referring to those reports (5.28) that "the preceding evidence demonstrates excess demand" but it does no such thing. Cave merely says that congestion exists and this mantra is repeated down the chain. Your sub-contractor Indepen says for example, that the twice yearly regional planning meeting is evidence of congestion when it is actually evidence of complexity not congestion.

3.1. To address this properly we asked the CAA how many unfulfilled VHF assignment requests currently existed in the UK and they said there were none. We are certain you know this already. At the time of writing there is, de facto, no excess demand whatsoever.

In considering this you will no doubt say that current demand does not need to be excessive because AIP should be applied wherever there is any potential for excess demand. Both you and Professor Cave have used this line because it can be said to be true of any commodity on the planet. However, it is not a valid discriminator for policy decisions about spectrum management. As we discuss in section 3.2 below, international agreements allocate channels to the UK according to its needs so the amount of spectrum available follows demand closely. The CAA has told us that if we have a requirement for an additional channel, it will be provided through the European arrangement. For the UK, demand does not exceed supply and the existing arrangements allow for an increase in supply in response to any future increase in demand

3.2. When we put this to you at a meeting between Ofcom and the LAA, you said that you rely on the Helios report, which includes a map representing what it calls the density of UK assignments by area (page 20) to demonstrate excess demand and congestion. First of all, Helios is not an independent analyst, it is your subcontractor employed to support your proposals and you must bear the responsibility for anything you draw from its report. Their approach demonstrates a fundamental misunderstanding about aeronautical spectrum distribution or if it is not misunderstood then it is misrepresented. Because of the absolute need to prevent interference there are rules for repeat assignment which you explain and which Helios lists. The map actually represents areas where frequencies cannot be reused because of these rules and it is most dense in the south-east of the UK due to assignments in mainland Europe. It is not a representation of demand in the UK which is the whole basis of your proposition. If all UK assignments were removed this representation would still show significant areas where frequencies cannot be reused. If all European assignments are removed from this depiction then it becomes clear that UK use of aeronautical spectrum is very modest. It cannot be called congested and there is clearly no excess demand. What Helios depicts and you use as the basis for this proposal is an illustration of the impact on the UK of spectrum use in Europe but that is not what you propose to address. This is a contrived methodology to provide you with basis for your proposal to introduce AIP but it is fatally flawed.

3.4. We agree that because of the way Europe manages its air traffic systems there is significant spectrum use there which, by international agreement, leaves but part of the spectrum available for use in the UK. As we shall demonstrate, applying a control on spectrum use in the UK merely transfers allocation back to Europe which will have no impact on the density depicted on the map and will gain us nothing. In fact it would cause a net loss of spectrum to the UK.

3.5. You make specific mention of aeronautical band congestion and Professor Cave used the same term but it is being misused by both of you in the aviation context. Congestion is something that arises when the level of communications traffic prevents or delays messages being passed. You have used the term congestion to describe the situation where almost all the channels available in the band are taken up and you aver that this is unsatisfactory. In fact aeronautical channels have very low utilisation (and therefore low congestion) and the whole band has an overall very low utilisation over time; congestion is very rare indeed. Because failure to pass a message can be a significant safety risk for aircraft, Industry and the Regulator seek to minimise congestion and this

is done by separating functions and utilising as many available channels as possible. Thus your objective of reducing what you call congestion would have the reverse effect and a reduced number of channels would increase the risk of congestion with the concomitant increase in risk to the travelling public and to citizens generally.

3.6. Further, at your meeting with the LAA you introduced your concept of “hidden excess demand” to show that there is excess demand even though we could not find any unfulfilled assignments. You explained that potential new users might not declare their requirement publicly because they know there is no availability and you drew on experience with seat pricing and load factors in airline ticket sales in the Far East to evidence that concept. Translated to the current proposition, this suggests that service providers are currently limiting their business aspirations but AIP would somehow resolve that and expose new demand. However, aviation infrastructure is well defined and there are no “new potential users” who may suddenly come into the market with new airports or new air routes. Airports are not built speculatively and the air route structure is not open to competition. Moreover the number of VHF channels required for aviation is very stable and does not respond directly to changes in public demand. The number of channels needed at an airport is largely set by the configuration of the airport and even very significant changes in passenger numbers and aircraft movements do not change that requirement. For example, if a new runway is built for London, it will need a tower frequency and a ground frequency; a modest change in spectrum requirement for an enormous uplift in capacity. But such changes happen in the very long term and the CAA have told us that such assignments can be dealt with in concert with Europe. Similar considerations also apply to the route structure. Overall we did not find your concept of hidden demand to be at all persuasive; it seems to be an import from a quite different economic situation that is used to try to bolster what is very weak case.

#### ALTERNATIVE USE

4.0. In the last consultation we argued that international agreements applying to aeronautical spectrum prevented alternate use, the second key requirement for AIP, and therefore AIP should not be applied. It appears that you accepted this at least in part by now proposing that alternative use by other aeronautical users is possible and should be considered. Your paragraph 4.157 recognised this point. However throughout the document you refer to other alternative uses “at the margins” and “in the longer term” when you know that is not a realistic possibility. In the impact assessment (A.8) your consultants say that not applying AIP to the users of aeronautical spectrum will deny its use to other valuable services such as mobile broadband. Of course this is nonsense as you well know that such alternative use will never be allowed by the rest of the World and for the safety of aviation should not be contemplated by you. If, as you argue and some believe, aviation will grow, the spectrum assigned to aviation may well be extended further so reallocation to alternative uses is unrealistic. Moreover, your suggestion that new technologies will enable aviation to forego spectrum for alternative use in the longer term is also flawed because if new technologies reach aviation, which is very slow to move because of worldwide conservative regulation, they will have certainly reached those alternative uses earlier and removed demand there first. Therefore we still

maintain that there is no prospect whatever that that AIP will in any way cause spectrum to be released for alternative uses outside aviation and your earlier response appears to accept this.

4.1. We now turn to your statement (4.157) "that it is possible within the existing spectrum use for assignments to be distributed differently if users reduce their requirements". This sets the new test of alternate use that is necessary before AIP can be applied. It is instructive to consider 2 examples of how such alternative use might be achieved:

4.1.1. In the first assume that a UK approach or upper sector frequency is given up in response to AIP. That frequency does not belong to the UK to reassign because of the interference issue – it belongs to Europe and if the requirement for it is removed it must be given back and may be reassigned to a user in another country. It is true that the UK could bid for it on behalf of a potential UK aeronautical user on the same basis as other nations but there are many more of them than there are of us so the probability of it coming back to the UK is much less than one. So in this example AIP causes the spectrum available to the UK to reduce to the disbenefit of UK society. This is an excellent illustration of a fundamental flaw in your proposal on applying AIP to aeronautical spectrum. The World and Europe allocates spectrum through regulation and the UK is an integral and subordinate part of that. There is no UK spectrum market and if you create an artificial one by introducing AIP, there will still be no market forces because you cannot isolate the traded product from the direct regulation of Europe without withdrawing from international agreements. There can be no UK internal market for this spectrum as it cannot be reassigned in the UK but has to be given back to the European regulatory system. AIP applied as you propose would cause UK society to lose the value it obtains from spectrum.

4.1.2. In a second example, assume that a tower, AFIS or A/G frequency is given up. These frequencies are given to the UK to manage and are already used in several places separated by the appropriate protection distance. In almost all cases the only place that a frequency can be reused is very close to the original site and for its original purpose (we recognise that most frequencies can be reassigned in the Shetlands or Hebrides but clearly there is no demand there). Given the quite static nature of UK aviation infrastructure that we described earlier and because of stringent planning restrictions, new airfields do not spring up next to and in competition with existing airfields. So there is a very high probability that any of these frequencies that are given up will remain unused. If there was a potential user for a frequency for the same use, it is extremely unlikely that they could be allocated the available frequency because of the geographical issue. Therefore there is a significant probability that it would remain unused in the UK or be reallocated within Europe as part of a general reassignment. This is an example of the second fundamental flaw in your proposal. If you create an artificial market by introducing AIP, there will be no market forces because even where the traded product is under UK control it cannot generally pass from one user to another. Again, UK society will lose the value it obtains from this spectrum.

Returning to paragraph 4.157 in the consultation you assert that “there is scope for assignments to be differently distributed between users and potentially for more assignments to be accommodated if existing users reduce their spectrum requirements”. We have shown that this theory, on which the whole of your proposal appears to be based, does not stand scrutiny. There can be no direct distribution between users. If existing users reduce their spectrum requirements, the number of assignments available to UK society will not increase but will reduce.

## EFFECTIVE MANAGEMENT OF AERONAUTICAL SPECTRUM

5.0. Your proposal would move the responsibility for spectrum assignment from the regulator to the end users and in para 1.22 you propose that they are much better informed than the CAA and are also better at assessing safety needs although you offer absolutely no evidence or supporting material to justify your astonishing assertion. We do not subscribe to your view at all. Clearly an end user makes their assessment and judgement based on their own commercial situation and aspirations. They have no knowledge of the needs of others users and even if they did their directors are obliged to act in the best interest of their shareholders. Your desire to move to a synthetic market model for spectrum management therefore presents itself as a desire to wrest control from the aviation regulator rather than to ensure that society gains most benefit from aeronautical spectrum. We do not believe that is appropriate behaviour for a public body.

5.1. At the top end of the sector, your studies show an AIP charge of less than a penny per passenger for airlines using main airports so there will be no price issue for the user to face and even if there was they would be able to pass it down to the passenger. Because of the volume of end charge payers, frequencies could be held or additional frequencies taken up with no meaningful penalty to the service provider. Your consultants recognise this in their report concluding the cost in this area would be insignificant so it is clear that AIP would be ineffective in this part of the aviation sector.

5.2. Unlike airlines where some 100 passengers would share the per-flight cost of AIP for public transport operations, at the sporting, recreational and training end of the sector the pilot is the sole end fee payer. For non-public transport operations a pilot is prevented by law from charging fees to passengers and on average there is only one passenger per flight. AIP charges here will be significant and have a detrimental impact on SMEs which rely on general aviation for their business. Some service providers will have to forego VHF com assignments for compelling business reasons notwithstanding that their operations will be less efficient and less safe. Your consultants propose that the correct policy response to this is for the CAA to enact secondary legislation to force the user to maintain the frequency and pay the AIP fee. Such pre-planned intervention will both distort your proposed synthetic market and stop it operating in the way you propose that it should. Setting up a market and then legislating to reapply the regulatory controls it replaced would be a pointless, expensive and inefficient policy that would also compromise the current safety regime.

5.3. It is clear that applying market forces will not make spectrum management more effective than management by the Regulator and we can find no evidence in your consultation to support your assertion that it would. However, if AIP were to operate as you intend and spectrum allocations did change to follow market forces, safety would reduce where frequency allocations are given up contrary to the expectations of society. If the CAA legislates to prevent this, no frequency allocations will occur and the charges set will become a tax which is contrary to the law. Society will not benefit in any way from this exercise.

5.4. Quite extraordinarily, you suggest that the UK should lead the World working towards releasing aeronautical spectrum for other uses when the UK has little influence on the World aviation stage and safety and our own national interest demands it should do no such thing.

#### VALUE TO SOCIETY

6.0. You propose in para 1.7 that AIP would improve the value obtained by society from this spectrum. You go on in 1.8 to say that where a frequency allocation is transferred as a result of AIP "it is reasonable to conclude that the value derived by society is increased". You do not explain how you draw that conclusion and nowhere in the consultation do you define what that value actually comprises. However, in our comments under the heading of Alternative Use we were able to show that transfers of aeronautical spectrum result in a clear net loss to society. So we assert that your unsupported statement is false. If you intend to pursue this course you must define and quantify the value to society and then demonstrate in auditable figures how that value is increased as a result of applying AIP to the aeronautical spectrum.

6.1. In para 1.8 you equate the value to society of spectrum to the opportunity cost. As AIP is to be set to reflect that opportunity cost, the value to society which accrues from AIP in this case is therefore the revenue stream. However in para 3.9 you note that in setting AIP you do not take into account the effect of the revenue raised. This is a significant contradiction in your policy as the objective of AIP is to maximise value obtained and therefore revenue but you cannot take account of it in your policy.

6.2. We then considered what other benefit (or disbenefit) might arise. The total revenue stream is not quantified in the consultation but appears to be in the order of £4m to £7m however you must take no account of that. Beyond revenue, spectrum does not provide any direct value to society; it is the service that is enabled by the use of spectrum that may provide that. In the case of aviation, the service that is so enabled and does provide benefit for society is the safety and regularity of aviation in the UK. We discussed that earlier in our response and it applies not only to passengers but also to other airspace users and all citizens in the UK any of whom may suffer the consequences of a safety failure. That this service is applied adequately across all airspace users is a function of the safety oversight and management by the CAA but if you proceed as you propose, that task will be passed to synthetic market forces. To be effective, AIP must tend to cause movement in spectrum assignment but you acknowledge that this may have negative safety consequences which would be a disbenefit to society and you suggest that the CAA would need to legislate to

prevent that. Putting this into a financial context, current compensation claims for death in aircraft accidents are in the order of £1M to £5M per person so it would only take a very small accident to overtake the £4 to £7m revenues achieved. Once Ofcom overheads are deducted the revenues reaching the Treasury would not exceed the value of a single life.

6.3. You note that you would expect any safety issues to be resolved by the CAA using legislative powers. It was not possible for us to accurately cost such legislative action but it seemed likely that it would be of a similar order to the values described above.

6.4. Having searched your proposal we cannot identify a valid benefit to society. AIP would cause the amount of spectrum available to the UK to reduce and the direct cost of safety disbenefits is likely to exceed revenues.

## DATA

7.0 We reviewed the data presented by your contractor and noted a number of anomalies. For example, they appear to have used the published airfield aeronautical information as the source of frequency assignments but have failed to understand its significance. Lasham, a gliding site, requires visiting aircraft to contact the adjacent Farnborough approach but because this frequency is listed by Lasham your contractors have assigned it that approach frequency. RAF Northolt, a busy VIP and business aerodrome has 5 assigned frequencies but your contractors put its total AIP charge as £350. Although we were unable to analyse all the data, there appears to be a number of questionable data entries suggesting that this is not a valid analysis and is an unsafe basis for any policy conclusions.

7.1 We also looked at the way Helios calculated the minimum separation distance between stations using the same frequency and how they assessed the areas sterilised by each assignment. There is a basic error in halving the minimum separation distance for Aerodrome Control stations where 166km is used when it should be 162km. That linear error is compounded when converted to an area adding some 4000km<sup>2</sup> per station and when multiplied by the number of stations and frequencies concerned it becomes very large. This flows through into the resulting interpretation which is therefore invalid. Helios then wrongly asserts (Table 4 p14) that 37 squares of 50x50km are sterilised by any one station when it is actually 33. They develop a 'circular' pattern of 36 squares (p18) covering 90,000 sq km, sterilised by one station. This argument is just not sustainable on the basis of the true 33 squares, and a smaller pattern of 28 squares is more realistic figure. Again, when this overstatement of 20,000 km<sup>2</sup> per station is multiplied by the total number of frequencies and the total number of assignments this error becomes enormous invalidating all the data on which your proposal is based. We can now see why your consultants puzzled over finding that there appeared to be more frequencies allocated than actually exist. Gross error appears to be the reason. Your proposal cannot go forward on this basis.

## OPERATIONS AND MANAGEMENT FREQUENCIES

8.0. Within the aeronautical spectrum, some frequencies are not used for the safety management of aircraft but for commercial messaging through operations rooms and handling agents at airports. You propose to charge these at the lowest rate but these are clearly equivalent to business radio in the way they are used. They are in the aeronautical band for largely historic reasons. In times past VHF or HF radios were the only means of communicating with aircraft but increasingly other carriers are used. In particular the demise of HF with the closure of Portishead and BA stations has left Stockholm as the only HF ground station close to the UK and has thus driven the change. Similarly an exodus from VHF radio for these business-type services could be hastened by AIP and provide benefit to society. There appears to be existing alternative channels for this traffic and it seems reasonable for AIP to be applied to them.

## CONCLUSION

9.0. Safety in aviation is an overriding concern of Society and it demands that regulatory changes should not be made unless safety can be shown to be improved or be at least unaffected as a result. Your concern is solely with the management of aeronautical spectrum and you have done no safety analysis whatsoever. You say you expect the CAA to regulate to prevent any safety disbenefits but we are of the opinion that English law is such that if Ofcom enforces AIP then it must assume both corporate and individual liability for all and any safety issues that will ensue.

9.1 You state that excess demand exists but adduce no evidence to demonstrate this; in fact there is currently no unsatisfied demand for aeronautical spectrum in the UK. Aeronautical spectrum has low utilisation for safety reasons and it cannot be said to be congested. Repetition of a mantra that there is congestion and excess demand does not make it so and is an inadequate basis for the proposal. Your methodology for illustrating the geographic density of assignments in the UK is flawed as it actually shows the impact on the UK of assignments made in Europe but you do not intend to address that issue at all. The UK is assigned only a modest amount of spectrum but nowhere do you illustrate that, perhaps because it is European not the UK use that is the problem. Applying an effective market control on UK spectrum would merely transfer it back to Europe, increasing their share, reducing ours and making no change to your illustration. Your concept of "hidden excess demand" is not valid because spectrum is not a consumer product and there are no ranks of potential users waiting for AIP to be introduced before building new airports or opening new air routes. Thus the first required test for AIP, that there should be excess demand, fails.

9.4. Your position on alternative use is untenable. There is no possibility that AIP will tend to cause aeronautical spectrum to be released for other purposes such as the mobile broadband you propose. This spectrum is governed by World agreements and standards which you cannot influence effectively. There is also no possibility that alternative use can be made by other aeronautical users because of the way this spectrum is regulated internationally. Spectrum is allocated to the UK sufficient for its requirement and anything given up must be returned to the European pool for reassignment. Where a frequency is managed nationally, it can only be used in its existing location for its existing purpose so the concept of valid alternative use is fictitious. If AIP did cause frequencies to

be given up they would be reassigned by Europe or left unused so the benefit to UK Society would be reduced. Thus, the second required test for AIP that there be an alternative use also fails.

9.5 Your assertion that users can manage spectrum better than the regulator is nonsense because users must act in their own interest. This suggests the proposal is based more on wresting control from the CAA than from benefiting Society.

9.6. You recognise that the impact on the airline passenger would be negligible but you do not recognise that this means that AIP would have no impact and be ineffective in that sector. You do recognise that the impact in the sport, recreation and training sectors would be very significant but you fail to address the impact on users and SMEs in particular. Where an airfield needs to react to AIP by giving up VHF radio you propose that safety should be maintained by the CAA legislating to prevent the change. That would remove any supposed market and make AIP a tax. We therefore conclude that contrary to the requirement for its imposition, AIP set by Ofcom would be less effective at aeronautical spectrum management than the current arrangement implemented by the CAA and would be more expensive to operate.

9.7. The value obtained by society from aeronautical spectrum is the safety and regularity of aviation. Spectrum itself has no direct value save the revenue which you propose to raise from AIP. As presented this is a trivial sum in relation to the value of life. AIP would remove that element of safety management from the CAA and give it up to market forces driven by the commercial requirements of certain service providers. Such loss of safety would be unacceptable to Society.

9.8. We have found significant errors in the base data you use to build your proposition. In particular the overstating of the area sterilised by an assignment when multiplied up by the number of frequencies and number of assignments produces a quite erroneous basis for your proposal. We therefore feel unable to trust *any* of the data provided by your consultants and cannot accept any of the propositions you base on it.

9.9. We consider that AIP is appropriate for those frequencies used for management purposes by handling agents, airline operations and the like but you have priced these at the minimum scale. We support the proposal to apply AIP to those uses of aeronautical spectrum and believe these should be charged at the full commercial rate.

9.10. We oppose the remainder of your proposal on the basis that the UK use of aeronautical spectrum is not congested and there is no excess demand. AIP would not release spectrum because surpluses would be taken up by Europe and the density of use over the UK would be unchanged. Since no proposal similar to AIP exists in any other national legislation anywhere in the world, implementation of AIP in the United Kingdom would compromise the safety of aviation here and could benefit it in other states, creating a situation that would quickly be denounced by Society. Use of this spectrum outside aviation is not tenable because of international agreement. As there is no excess demand and no alternative use, the 2 required tests to validate AIP fail. Moreover, the other

characteristics required of AIP, that it improves spectrum management and increases the value obtained by Society are also absent in this proposal. We conclude that any charges made by Ofcom for the use of aeronautical spectrum beyond licensing costs would amount to a tax on safety.

10.0. The LAA and the GAA oppose your proposal to apply spectrum pricing to the aeronautical sector on the basis that there is no excess demand and no practicable alternative use for this spectrum. The application of AIP would not cause spectrum to be managed more effectively, its value to society would diminish and safety of aircraft, the travelling public and society at large would be compromised. We propose that the present management arrangements for aeronautical spectrum are satisfactory and should continue. We would not object to the applications of spectrum pricing to management and operations functions that use this band

LAA and GAA

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