Finding the Opportunity in Change

Stories from Around the World

March 2012

Articles Inside:

- THE RELUCTANT SELLER MEETS THE CASH STRAPPED BUYER – WHO WILL BLINK FIRST?
- REGULATION WITHOUT TEARS? THE NON-COST RELATED APPROACH
- BRAZIL – THE WAKING GIANT SEeks A PRIVATE PILOT
- THAILAND – ADDRESSING AIRPORT CAPACITY NEEDS THE RIGHT WAY
- AVIATION IN THE DEVELOPED WORLD – DRIVEN BY COST AND REVENUE INITIATIVES, NOT EXPONENTIAL TRAFFIC GROWTH
- LIFE IN THE SLOW LANE – THE UK DEPARTMENT FOR TRANSPORT REDUCES ITS LONG-TERM FORECASTS OF AIR TRAFFIC
- ENERGY SAVINGS PERFORMANCE CONTRACTS – A STRATEGY TO REDUCE AIRPORT ENERGY COSTS
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Dear Reader:

The prolonged recovery from the financial and economic crises of the last few years, and the uncertainty overhanging the Euro currency, has prompted new thinking about airport ownership, financing, and operations.

In the advanced economies of North America and Europe, new challenges created by volatile currency and oil price swings, an ageing infrastructure, the availability of capital, and ongoing restructuring in the airline industry suggest that airport ownership and financing models, as well as airport planning of all types, will need to be responsive to a constantly changing environment. While growth in air traffic activity has to a large extent ground to a halt, the appetite for private sector involvement in airport development remains (as evidenced by the high level of interest in Brazil’s airport concession auction and BAA’s sale of Edinburgh Airport).

The airport sector in the developing world faces its own, and not necessarily similar, set of change agents. Whether it is building facilities in advance of major sporting events (such as Brazil, with the 2014 football World Cup and the 2016 Olympic Games), or just the general need to upgrade the creaky or nonexistent aviation infrastructure to accommodate and foster high levels of economic growth (such as India), new airport planning models that place a premium on flexibility and creativity need to be developed and implemented. While developing countries have high aviation activity growth rates and badly need infrastructure, there is a significant level of scepticism regarding the private sector’s ability to deliver the needed upgrades.

The series of articles presented on the following pages reflects our thoughts on the forces of change roiling the aviation market globally, and how airport industry leaders in various locations around the world are responding to them. We hope you will find them interesting and informative.

Mark Lunsford
Vice President – Global Aviation
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Reluctant Seller Meets the Cash Strapped Buyer</td>
<td>1</td>
</tr>
<tr>
<td>2. Regulation Without Tears?</td>
<td>4</td>
</tr>
<tr>
<td>3. Brazil</td>
<td>10</td>
</tr>
<tr>
<td>4. Thailand</td>
<td>16</td>
</tr>
<tr>
<td>5. Aviation in the Developed World</td>
<td>20</td>
</tr>
<tr>
<td>6. Life in the Slow Lane</td>
<td>24</td>
</tr>
<tr>
<td>7. Energy Savings Performance Contracts</td>
<td>30</td>
</tr>
</tbody>
</table>
1. The Reluctant Seller Meets the Cash Strapped Buyer

*Who Will Blink First?*

Over the past few years, there has been a subtle change in the way airport privatisations are viewed. Whereas once, airport privatisation transactions were driven by the expectation that the private sector would be more efficient and effective than the public sector in developing, financing, and operating airports; this view has been overtaken by one in which the private sector is called upon only when absolutely needed, and even then is treated with a degree of suspicion. This evolution is most pronounced in developing nations, where the airport sector is viewed as representing a key national strategic interest, but also has manifested itself to a certain degree in the advanced economies.

**The Original Airport Privatisation Vision**

The original impetus for airport privatisation in the 1980s was primarily ideological. The objectives of the earliest airport privatisation (the dissolution of the old British Airports Authority and the subsequent sale of shares in BAA Limited in 1987) could be summarised as follows:

*The Government led by Margaret Thatcher was committed to converting as many as possible of Britain’s airports into private sector companies as part of its policy of reducing the role of the State. The Government was confident that the privatisation of airports would bring substantial benefits. Besides reducing the size of the public sector, privatisation was expected to assist the Government’s objective of creating wider share ownership. It would also increase employee participation as, in line with previous privatisations, employees would be encouraged to buy shares at the time of sale. Privatisation would also provide for greater freedom for management. For example, airports would have access to private capital. It would also encourage more innovative management, and lead to efficiency gains and greater responsiveness to customers. These benefits were expected to have profound consequences for the future operation of airports in Britain.*

Implicit in these objectives is a belief in the private sector’s ability to offer superior management, efficiency gains, and responsiveness to customers, together with more investment once the entity is freed from government control. An initial public offering was seen as providing these potential gains even where individuals involved in management and the structure of the organisation remained essentially unchanged after privatisation. These objectives were set alongside a stated belief in the importance of reducing the role of the public sector.
Evolution of the Vision

It would be a rare government today which was able to approach the future so positively. Nevertheless (and arguably), many of these promises have been fulfilled. For example, it is difficult to suggest convincingly that BAA has experienced an investment strike as evidenced by its £4.3 billion investment in Terminal 5 at London Heathrow Airport and the major range of further projects now in development or on the drawing board. While not all privatisations have been ideal, the general view would be that service and investment have been no worse in the private sector – and in most cases significantly better.

It is nonetheless curious that, when assessing privatisations which have taken place in the last year together with those in the pipeline, justifications for these transactions based on the positive benefits of ideology have generally been replaced by justifications related to the amelioration of negatives of various kinds. Recent privatisations have been justified on the grounds of:

- Allowing new investment to take place after a substantial period of neglect by the government (particularly where such investment is critically needed for an upcoming event – such as the 2014 football World Cup in Brazil)
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Given that the reasons for airport privatisations are to ameliorate negatives, there appears to be little of the enthusiasm for trusting in the private sector, which once would have been so important. And over the past few years, it has been striking how much effort has been taken in countries such as India or the U.S. to retain control and protect consumers and citizens from the dangers of private sector ownership rather than free up airport management from the constraining shackles of the government or an agency of government. Consequently, there have been notably more failed or failing privatisations since the protections required by the government have made valueless what might once have been very attractive assets.

In parallel, sales in the private sector seem to have taken place for different reasons. Where once there might have been profit taking in the belief that the company concerned had added significantly to asset value, now private owners too may be selling under pressure either from equity and debt holders, or (as in the case of BAA) under pressure from governments.

The general effect of this is to generate a new stream of transactions in the last year, often not related to privatisations, and many of which are significantly more complex than the 100% freeholds that used to be sold at airports in the UK, among others. Additionally, LeighFisher has detected the rise of the reluctant privatiser or reseller, who apparently has little belief or interest in the benefits imagined to arise from the privatisation process.

Recent and Ongoing Transactions

A year ago, there was little expectation of significant transactions. However, in practice, there have been several eye-catching deals in the past year:

- MAp Airports Limited (formerly Macquarie Airports) completed a share swap with the Ontario Teachers Pension Plan (OTPP). OTPP’s 11.02% stake in Sydney Airport was exchanged for a cash consideration and MAp’s shares in Brussels and Copenhagen airports, effectively representing MAp’s final retreat from a major worldwide airport owner and operator to a single Australian asset. MAp’s investors have increasing reservations about the opacity of the MAp structure, a wider questioning of the infrastructure fund model, and concern about the difficulty of retail investors to value stakes in airports in, say, Mexico or Japan.
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ing at this unpropitious moment, but frequently cited is that for their new shareholders, Spanish construction firm ACS, such assets are non-core. Once again, there have been pressures to simplify at the expense of losing a dynamic, vigorous, and very well respected business.

• Spanish construction group Ferrovial announced the sale of 5.88% of BAA Topco to Alinda Capital Partners following a fairly drawn out marketing process. The widely speculated reason for this is the resulting ability of Ferrovial to deconsolidate BAA (and its debt) from their balance sheet – effectively a $20 billion reduction. As before, there has been an important presentational element to the sale.

In 2012, a significant amount of activity can be anticipated for a variety of reasons.

The BAA sell-off saga finally reached a resolution. Following a lengthy and contentious process, the UK Competition Commission conceded that BAA could sell one of Edinburgh and Glasgow airports before London Stansted Airport (a significant concession). Given a reasonable estimate of the amount of time required to complete this sale, it can therefore be speculated that any sale of Stansted will not take place before late 2012.

Ferrovial chose to sell Edinburgh Airport (rather than Glasgow Airport). On the face of it, Edinburgh looked like the easier sale in difficult times; one which would have the biggest effect on debt ratios as a result of its likely higher price/EBITDA ratio. Edinburgh is the capital city of Scotland, a significant financial centre, and a vibrant inbound tourist destination.

One big transaction that didn’t make it beyond the starting blocks was the concession of Barcelona and Madrid-Barajas airports. The Socialist Spanish government placed an initial price on both Barajas and Barcelona El Prat that was viewed by the market as too high. Then the government changed, prompting a re-thinking of the strategy with regards to airport privatisations in general.

Other deals that may be undertaken in 2012 include:
• The concessioning by the Brazilian government of São Paulo/Guarulhos, Brasília, and Viracopos/Campinas international airports, where successful auctions were undertaken on February 6, 2012 (LeighFisher has acted as sell-side technical advisor on these transactions)
• The sale of Luis Muñoz Marín International Airport in San Juan, Puerto Rico (where LeighFisher is also acting as sell-side technical advisor)
• Regional airport transactions in Russia
• The potential concessioning of Greek regional airports

Sale of a majority stake in Newcastle Airport in the north of England
• The potential sale of 49% of Incheon International Airport Corporation (Seoul, Korea)
• The potential privatisation of ANA, the Portuguese airport operator, as recently announced by the Portuguese government

Beyond those, there could potentially be a sale of one or more of the three major Irish airports (or of Aer Rianta International’s international operations) and of French regional airports. In both cases, such transactions are likely to occur later rather than sooner.

Conclusion

In summary, 2012 could well be an interesting year where there is a standoff between reluctant sellers who are often suspicious of privatisation in itself as a force for improvement, and buyers who are finding it problematic to raise capital (sometimes as difficult as it was in 2008). In the past, the result has been stalemate: Are the imperatives to sell more powerful this time? And in countries like Brazil, could a more positive view of the private sector take the upper hand once more?
2. Regulation Without Tears?

The Non-Cost Related Approach

A lot of attention has been paid throughout the world to what could be described as classic cost-plus regulation in its various forms. This regulation has been the foundation of single till and dual till pricing and has been used for rate of return and price-cap (CPI-X) regulation in many countries. In the process, regulation not based on cost has tended to be treated as a guilty secret – or at best as a poor relation to “proper” cost related approaches.

Interestingly, however, the original intention behind CPI-X in the UK did not involve setting X to match costs. Instead, X was intended to be set by some form of efficiency target established by an independent regulator, deliberately designed to move away from any form of profit control (this is why X is often referred to as an efficiency factor). Part of the reason why a cost orientation was not thought to be necessary was that regulation was originally seen as a temporary post-privatisation measure intended to “bridge” the gap while competition was brought in.

The approach to CPI-X price setting at airports has changed substantially from these original intentions. However, even now, well-designed non-cost related charges have arguably better efficiency incentives than cost-plus approaches, and can in the right circumstances provide transparent, stable, and predictable regulation with relatively low regulatory costs – particularly for airports letting short- or medium-term concessions.

This article looks at the circumstances in which Non-Cost Related Regulation (NCRR) may be appropriate and the considerations to be dealt with in setting up a NCRR system.

The Standard Cost Related Model and Its Problems

Although there are significant differences in the application of cost based regulation at different airports, over time a standard model has emerged. This model is based on a series of basic cost elements known as “building blocks” which are shown below.

CPI-X or rate of return based on these building blocks has become very much the industry standard approach to formal regulation, to the extent that there has been relatively little discussion of the alternatives. And, after all, if the approach is so well established and seems to work well, why would you want to consider the alternatives?

Well, in practice there may be a number of reasons:

- The process can easily become complex and time and resource consuming. In the UK for example, a price setting process spreads over two or more years
with the final reports being many hundreds of pages long.

- Inevitably there is a strong requirement for regulator judgement which, in a number of legislative systems, could be potentially open to legal challenge and, at worst, could leave the regulator facing liabilities.

- Whether CPI-X or rate of return control is used, the approach limits efficiency incentives, with the airport operators knowing that in the end the regulator will have to ensure that there will be income to cover its costs. This is particularly the case with single till where the profit measure employed must logically be a floor as well as a ceiling if the airport is to operate sustainably.

- It can create a variety of perverse incentives. A particularly prominent example involves capital expenditure. Depending on the regulator’s approach to the cost of capital, and whether it is greater or less than that of the airport, there can be incentives either to build as much and as expensively as possible, or, as far as possible to build nothing. There is not a strong incentive to produce an efficient solution.

- It encourages antagonism between the parties (i.e., the airport operators and the airlines) with each side spending a lot of timing producing extreme versions of its views, and playing a variety of unhelpful games on regulatory issues.

- Given the strong need for regulator judgements, investors are likely to be looking for a well-established record of independent regulation – which may be difficult to demonstrate. Indeed, past experience of the use of regulatory discretion may actively deter investors. Moreover, they will always be concerned about the hold-up problem: that a government will promise one thing when people are putting up money for a project or company, only to apply something much harsher in practice when all the money has been paid out.

- Finally, the very need for the regulator to make a wide range of decisions – even if these are impeccably independent – may mean that cost related approaches may well lack the predictability and stability required to enable all parties (airlines, airport operators, and investors) to plan ahead with confidence.

The Non-Cost Related Alternative

So, let us suppose that a country, for some or all of the reasons mentioned above, is considering a NCRR approach to price controls. For the purposes of illustration, we will assume that this country is letting a concession to one or more airport operators for a limited time period (say 30 years) and that it wants to apply a basic CPI-X approach to price controls – in other words, to employ what is now generally thought of as best practice. What are the major issues the country must deal with?

While each country has its own list, the major points to be addressed are likely to include:

- Setting the appropriate starting price.
- Determining the formula for X in the absence of a basis in costs.
- Incentivising capital expenditure and service.
- Defining circumstances in which changes should (or must) be made to long-term pricing arrangements. These may include:
  - New regulatory measures in areas such as security, safety, or the environment

The need for special measures to deal with change under the NCRR approach makes it more suitable for concessions with a medium-term life rather than those that are sold outright or have a very long-term life.

The range of points which need to be addressed will now be considered in turn.

Setting the Start Price

An important feature of NCRR is that if repeated cost based intervention is to be avoided (which is after all the whole point of the system), a degree of robustness needs to be built into the system. From this perspective, the key point about the opening price is that it should not be too low. Firstly, it needs to be high enough to ensure that if extended for the life of concession (with a predictable value of X), it will be sufficient to cover all of the costs and make a return on all of the capital expenditure. Broadly speaking, the opening price must at least cover
the long run average incremental costs (at least over the period of the concession). However, it also must be high enough to deal with two other factors:

- Allowing a margin to cope with a degree of downside risk in areas such as traffic and commercial revenues without having to lead to a major change in the formula. As noted earlier, the approach is designed for its stability, not for making modifications in response to changes in operational assumptions.

- Ensuring that over all of the time periods, the future value of the concession is positive: it is important that the concession does not, at some future stage, have a permanently negative future value, which would then make it “fail” (as discussed later). For that reason, it would not be appropriate for the concession to have higher returns initially only to lose a balancing amount of money at a later stage.

Setting charge levels high enough to achieve these constraints is likely to be a lot more palatable if the resulting prices remain relatively low on the international league tables. Airports where the resulting costs are relatively high are going to face a lot of pressures to use a cost based approach instead; or worse still, to move to a cost-plus approach having been sold to investors on a non-cost based one.

Incidentally, from a public policy point of view, while too low a price would cause major problems (having to renegotiate prices upwards to rescue a failing concession is never attractive), there are some compensating factors from the price being a little too high. Provided that there is a well-informed and highly competitive sales process, bidders should bid away any forecast profits – beyond those required to meet their risk-adjusted cost of capital. So, the beneficiaries should be the government through a combination of higher upfront payments and continuing concession fees – which may be performance based.

Lest users, and, in particular airlines, are bridling from any possibility of charges being higher than absolutely necessary, two possible benefits to them should be pointed out:

- While the approach needs to ensure that future investment is remunerated, it does not need to concern itself with past investments. In principle, users can effectively get those for free.

- Although the returns accruing to the government from the upfront and concession payments are effectively a tax on aviation, these returns should mean that less money is required from other aviation sources. So, the presence of excess revenues from charges should, in principle, mean that any other taxes can be lowered (though perhaps we should stress the “in principle” here).

### Determining the Value of X in the Absence of Cost Drivers

Moving on to the value of X, in the absence of a cost relationship, the designers of the system have a range of possible approaches. The key points to consider in practical terms would appear to be:

- Any future X setting should be transparent and predictable – and ideally mechanistic

- The implied value of X should not be too high, as that will inflate the start price required at the beginning of the process

- Users should be able to foresee some future sharing of gains (i.e., there should be falls in prices in real terms)
• The setting process should be **credible**

Possible approaches considered have included:

• **Simply set a fixed value at the start** and leave it to run. At Tirana International Airport for example, there is a fixed CPI-2 formula.

• **Set X related to a defined efficiency index** – which need not necessarily be related solely to airports. In other words, follow the original intention behind CPI-X.

• **Set X through a price comparison (benchmarking).**

• **Set a pre-defined formula related to cost drivers.** At Budapest Airport, for example, the value of X in a 5-year price setting is linked to traffic growth and capital expenditure over the previous 5-year period. This can be supported by the fact that:

  - Increased traffic would be likely mean that there are economies of scale which could be partly shared with users in the form of reduced prices.

  - Additional capital expenditure, on the other hand, would in isolation be expected to increase unit costs – a factor partly reflected in prices.

The reasons advanced earlier for using NCRR suggest that best practice is to use approaches which maximise predictability and, by implication, minimise regulatory discretion.

### Managing Capital Expenditure and Service

The next set of issues concerns capital expenditure and service. Unlike cost-plus regulation, where the airport operator can simply pass on any additional costs associated with these to users, in the case of non-cost based regulation, the airport operator may have to bear additional capital expenditure or service costs without necessarily getting anything in return.

That does not mean that the airport operator will necessarily be averse to all expenditure:

• **In the first place,** increases in capacity which lead to more traffic will be rewarded. Unlike the cost-plus case, higher traffic does not lead to lower prices (unless partly taken into account in the formula for setting X as in the Budapest Airport example).

• **Secondly,** improvements in service levels can have financial benefits to airports. For example:
  - They can increase commercial revenue by increasing dwell times in the shops (rather than in queues) and giving passengers a more relaxed and high quality ambience in which to promote shopping.
  - They can increase the market-ability of the airport to airlines considering operating new air service

Nevertheless, there may be a concern that the airport operator does not undertake the spending programme needed to meet the aspirations both of airlines (and of the country privatising its airport). This is a concern even under cost-plus systems and, on the face of it, would appear to have more force in a situation where the airport operator is not being directly remunerated for the work done. There are a number of approaches that can be used to deal with this:

• **Through inputs,** for example, by:
  - Having a programme of mandatory capital expenditure included in the concession agreement
  - Stating planning service standards for new facilities, and triggers for new construction – which are intended to ensure that capacity will be provided in a timely manner capable of delivering appropriate levels of service

• **Through outputs,** for example, by:
  - Requiring the airport to deliver on day-to-day delivered service standards
  - Including rewards and penalties in charges for service failures

• **Through processes** which might require, for example, regular master plan updates, including demand/capacity statements certified by an independent third party demonstrating that adequate capacity will be delivered to meet foreseen demand at specified service standards

• **By involving customer airlines** (as described below)

Taken in combination, these approaches should be capable of ensuring that the concessionaire delivers – but they will require monitoring and, to a certain extent, policing. As noted previously, to the extent that the airport operator is not rewarded for service or capital expenditure, it would be expected that the need for attention by regulators would be greater than in a cost-plus system. However, in practice, even under cost-plus systems, regulators seem to spend a substantial amount of time on these issues (partly because they need to prevent excessive “gold plated” expenditure).
Dealing with Change

The final big issue for NCRR systems is how to deal with changes which mean that the original assumptions no longer hold – how to design some flexibility in a system which is deliberately intended not to give scope for variation under normal circumstances. In contrast to cost-plus systems which effectively have mechanisms that can deal with the implications of change through adjustments to the regulatory cost and asset bases, in NCRR systems, specific approaches may need to be built in.

The first point to emphasise is that for most changes in assumptions, no action should be taken. The initial price should be set to ensure that most changes in circumstances are capable of being dealt with, and the investor in bidding for the concession should have made appropriate allowances for risk. Nevertheless, there remain some issues, which are probably best dealt with by building in a degree of flexibility.

The simplest and generally least controversial problem of this sort is dealing with new government measures in areas such as security, safety, or the environment. These measures are clearly not in the control of the airport and its owners and are areas where it is reasonable that the “user pays” principle should be applied. Here it may be possible simply for the regulator to make a one-off adjustment to prices solely related to matching forecast additional costs with revenues over the remainder of the concession life.

It is also possible to envisage a situation where a change in service standards or new piece of capital expenditure is generally agreed by airlines and others to be “a good thing” (even at some possible addition to cost), and the regulator accepts the change as being in the public interest. Once again, there could be a one-off price adjustment.

This could be taken further – as at Budapest Airport – to incorporate an important potential for role for airlines. The concession agreement need only specify the minimum requirements to deliver capacity and service. Airlines are highly likely to have their own priorities for capital expenditure and service. Airlines may be very happy to pay more than the regulation level if they can secure enhanced service standards and the specific capital expenditure that they want which might cover, for example:

• Expanding facilities earlier than strictly necessary to allow co-location of alliance partners
• State-of-the-art transfer baggage facilities to enhance baggage transfer in competition with other airports

At Budapest Airport, airlines and the airport operator are free to negotiate on such issues at the 5-year price reviews, and can also deal with any charges increase required to sustain them in an agreement, which will normally be accepted by the regulator. The agreement can also potentially extend to other areas, such as price structure or expansion of services through the airport. The key point is that airlines do not need to agree: if negotiations do not reach a successful conclusion, they will still get the base price and the facilities required by the concession agreement. The airport operator and airlines will only agree if they see it in both their interests to do so; there is genuine bargaining power for both sides.

The final problem is dealing with circumstances where (despite the various precautions allowing margins for unexpected outcomes, and timing problems in the initial price) the concession becomes non-viable. As a working definition, this will occur if the present value of remaining cash streams from the concession are not high enough to remunerate the capital and operational costs required by the concession agreement – and, as a result, the concession has a negative value.

There is, naturally a strong temptation to insist that a failing concession is the concessionaire’s problem – not that of the government or the regulator. However, in LeighFisher’s
experience, failing concessions – in whatever field – tend to become everyone’s problem. Typical symptoms of a failing concession are shown in the table on the next page.

Given the problems that these symptoms are likely to trigger with airlines and travellers alike, it may be advisable to include provision for a worst case in which something must be done to make the concession work. The “nuclear option”, that has been followed on occasion, is simply to take the concession back. However, this will be likely to create at least a degree of disruption and uncertainty and the possibility of a future confiscation is likely to be a significant deterrent to lenders and equity providers. They are likely to be particularly concerned that such problems could occur as a result of events which: were out of the control of the concessionaire; could not reasonably have been anticipated; and would have been relatively straightforward to cope with under more flexible cost-plus regulation.

It may therefore be prudent and appropriate that there be arrangements for the airport operator to apply for a “rebalancing” of the agreement under a limited range of circumstances where the original assumptions have proved not to be valid. Of course, to avoid “moral hazard” (that is, reckless behaviour on the assumption that the company or individual would ultimately be rescued from any adverse consequences), any changes made would be left at the discretion of the regulator/government and are unlikely to be generous. Also, the problems potentially could be resolved by adjustments to concession payments, concession life, or other conditions – not necessarily to the prices paid by users.

Conclusions

Despite the need to take on and resolve these issues, non-cost regulation can be a highly workable option – particularly for short- or medium-length concessions. At best it can provide a relatively straightforward approach which is low cost to administer and requires relatively little regulator input. If it is well designed, it can be transparent and predictable and give users and investors a high degree of confidence about outcomes. It also has much stronger efficiency incentives to operators than cost-plus systems. With the right provisions, non-cost regulation can also provide a useful method for promoting positive negotiated solutions for the airport operator and airlines, while providing a safety net if these solutions do not succeed.

However, there will still need to be a role for a regulator particularly in ensuring that the capital expenditure and service requirements set out in the concession agreement are appropriately met, and in dealing with changes in circumstances. Most importantly, the lower regulatory costs later on depend on getting things right at the beginning. A lot of thought needs to be put into areas such as making sure that the starting price level is viable and robust across a wide range of circumstances, and that the capital expenditure and service requirements are well specified without being inefficiently expensive or inflexible if circumstances change.

Overall then, NCRR may be the best option for a number of airport operators – but that doesn’t necessarily mean that the going will be easy.
Although there are many predictions, no one seems to know exactly when the world will steer a course back to economic recovery. The recession has been particularly severe in parts of Europe, nearly bankrupting Greece, Ireland, and Portugal; and serious questions are being asked about Italy and Spain. Every day, missed bailouts and the potential for another global financial crisis are making the headlines. “No one is immune in the current situation. It’s not just the euro zone crisis. It’s a crisis that could have collateral effects, spillover effects around the world,” IMF Managing Director Christine Lagarde told a panel discussion at the World Economic Forum on January 2012. The situation in the United States is not much better. Although much lower than the highest level reached in 2009, unemployment still hovers around 8.5%, and, in 2011, the federal government ran up yet another US$1 trillion plus budget deficit.

Yet while the developed G7 countries are in the intensive care unit, there are those that have already been checked out of the hospital with a mild concussion. Among these countries are the “BRICs” – Brazil, Russia, India, and China.

While the economic recovery is stagnant among the G7 countries, the BRICs seem to have re-discovered the path of healthy (and often super-charged) growth. The chart below shows the year-over-year percent change in gross domestic product (GDP) over the last 10 years for the BRIC nations and the G7.

**The Future is Now**

Brazil (or the Federative Republic of Brazil) has long been known as the pais do futuro (“the country of the future”). But for many decades, the future seemed to be lost in the midst of economic and political crisis. In recent years though, things have changed: inflation has moderated, foreign investments rose sharply, and people started to gain trust in their government. On November 2011, the Standard and Poor’s credit rating agency again raised Brazil’s long-term sovereign debt rating, to triple-B (BBB) from triple-B-minus (BBB-) with a stable outlook. At the beginning of 2011, during his visit to Brazil, U.S. President Obama said, “This is a country of the future no more. The people of Brazil should know that the future has arrived.”

Brazil, home to more than 200 million people, is the world’s fifth largest country, and the largest in Latin America. In 2010, according to the IMF, Brazil had the world’s seventh largest economy, only a few steps behind France and the United Kingdom. Its GDP per capita was US$10,816 in 2010 and is projected to be approximately US$13,000 in 2011, similar to the current GDP per capita of Hungary and Poland – members of the European Union. The rankings are likely to change in the coming years; according to IMF World Economic Outlook from September 2011, Brazil’s GDP is projected to grow at 4.2% between 2013-2016, compared to
Brazil is the only nation among the BRICs which has both the labor capacity to become a major manufacturing powerhouse, as well as the abundance of raw materials to become a dominant global supplier. From oranges to iron ore to biofuels, Brazilian exports are booming, creating a new generation of tycoons. “Brazil is the world’s biggest exporter of meat, coffee, sugar, fruit juices and the second biggest of grains”, said Brazil’s then agriculture minister, Reinhold Stephanese, at a conference in 2008. Meanwhile, the country is investing in cutting edge technology. It is the home of the world’s third largest aircraft manufacturer, Embraer, and the state oil company, Petrobras, is a global leader in deep water oil exploration.

With strong economic growth, more Brasileiros (Brazilian citizens) have joined the middle class. Today, there are approximately 90 million Brazilian middle class citizens, including approximately 40 million that joined those ranks since 2003.

Recent Evolution of Brazilian Aviation

During the last decade, air travel in Brazil has grown rapidly. Brazil has more than 2,000 airports, including landing strips, the second highest number of airports in a single country behind the United States. Air traffic has grown noticeably in the last decade. Since 2000, air traffic has grown at approximately a 6.4% compound annual growth rate, among the highest in the world.

Through multiple mergers, acquisitions, and other forms of consolidations, the country is now served by two major air carriers: TAM Linhas Aereas (TAM) and GOL Linhas Aereas (GOL).

TAM was established in 1976 and is based in São Paulo. As of June 2011, TAM operated an average of 972 daily scheduled flights to 84 cities in Brazil. TAM began international service in 1998 with service from São Paulo to Miami and currently operates 32 daily scheduled flights from Brazilian airports to 15 international destinations including Bogota, Caracas, Frankfurt, Lima, London Heathrow, Madrid, New York, and Paris.

In August 2010, TAM signed a non-binding agreement with Chilean airline LAN Airlines to merge and create LATAM Airlines Group.

GOL is a São Paulo based low-cost carrier. GOL is not a typical European-style no-frills airline; it is closer to the operating model of Southwest Airlines in the United States. GOL operates mainly domestic routes, but as of June 2011, it operated an average of 6 daily scheduled flights from the São
Paulo/Guarulhos International Airport to Buenos Aires and Caracas.

In 2007, GOL purchased part of the assets of VARIG, informally known as the “new Varig” which was operated separately as VRG Linhas Aereas, and in 2009 completed a merger with Varig.

In addition to these two airlines, Brazil has attracted many aviation entrepreneurs, including JetBlue founder David Neeleman’s new low cost/low fare airline, Azul Brazilian Airlines. Following the successful strategy of JetBlue in the United States, Azul has developed its hub operation at Viracopos/Campinas International Airport. Campinas is a satellite city of São Paulo.

Since the 1960s, most of Brazil’s infrastructure investment has been focused on improving the nation’s highway system, but the speed of air traffic growth has put significant pressure on the aviation system and the government’s need to provide adequate airport infrastructure. This pressure was elevated as Brazil was chosen to host the football World Cup in 2014 and Summer Olympic Games in 2016. In May 2011, The Economist reported that, “Most of Brazil’s airports are already operating above their nominal capacity. Baggage handling and check-in are slow; delays and cancellations common… hectic growth in local demand would still leave most airports overcrowded – even without 1 million football fans”.

**Summary of the Recent Airport Concession Process**

The Brazilian government decided to seek help from the private sector to develop certain airports. Shortly after her inauguration, President Dilma Rousseff separated the civil aviation department within the Ministry of Defense and created a new Ministry of Civil Aviation. The Ministry was created with a key mission: to improve and implement adequate airport facilities and programs throughout the country, even if it means the government needs to seek outside help. The mission began with the initiation to development of a greenfield airport in the city of Natal, located on the north-east of the country. In August 2011, the government selected at auction a preferred bidder – Engevix, teamed with Argentina’s Corporación America (owner of Aeropuertos Argentina 2000) – to develop and operate the airport over a 25 year concession period. The rights were sold for 170 million Brazilian reais (R$), well above the reserve price (minimum acceptable bid) of R$51.7 million set by the government.

Following the success of the bidding process for Natal, the Ministry undertook a much bigger effort – the sale of the rights to develop and operate three major international airports – São Paulo/Guarulhos, Viracopos/Campinas, and Brasília. These three include the busiest airport in Latin America and the main international gateway to Brazil (Guarulhos) as well as the commercial service airport of the national capital (Brasília). Viracopos is a major cargo airport and the hub for Azul. The three airports handle approximately 30% of the country’s passenger traffic, 57% of cargo volume, and 19% of all aircraft movements according to the civil aviation regulator (National Civil Aviation Agency of Brazil, or ANAC). In June 2011, LeighFisher was retained by Estruturadora Brasileira de Projetos (EBP), an agency tasked with attracting private investment and expertise to certain public infrastructure assets in Brazil, to provide a full suite of “sell-side” advisory services associated with the concession of these three airports.
The auctions were held on February 6, 2012. Auction rules were relatively simple:

1. Auctions for the three airports were held simultaneously.
2. Each bidder could participate in a bid for all three airports but could not be awarded more than one.
3. For each airport, three highest bids plus all other bids that were within 90% of the highest bid would be considered “active”.
4. Contract negotiations would begin with the highest bidder. If the highest bidder were to be disqualified, the 2nd highest bidder would inherit all the rights of the highest bidder and so forth.

Proposed bids were in the form of a nominal sum of equal annual payments over the life of concession. In addition to the proposed bid amount, the winning bidders will be required to pay an annual contribution based on gross revenue. The contribution share is fixed and different for all three airports—10% of gross revenues for São Paulo/Guarulhos, 5% for Viracopos, and 2% for Brasília. The winning bidders will also be required to make significant investments in capital improvements, with values estimated to be R$ 2.3 billion for São Paulo/Guarulhos, R$8.7 billion for Campinas and R$2.8 billion for Brasília. Financial penalties would be applied for non-compliance with service standards.

Below is the summary of auction results:

- Concession rights for Viracopos/Campinas were awarded to Triunfo Participações e Investimentos, UTC Participações and Egis Airport Operation with a R$ 3.821 billion bid. Other bidders include Novas Rotas, Operadora Brasileira de Aeroportos (Oba), and the winner of São Paulo/Guarulhos – the Invepar consortium.
- Concession rights for Brasilia were awarded to Infraer Aéroports with a R$ 4.5 billion bid. There were 7 other bidders including Aeroportos do Brasil, ADC e Has-Fidens-Millstream, and Invepar.

The table on the next two pages summarises the characteristics of the three airports and highlights key concession details.

CONCLUSION

Brazil is one of the relatively few countries displaying positive and encouraging economic news to the world in the present climate. But when it comes to airports and the aviation system, there is much work to be done – the country has a long way to go to have a first rate airport system. In 2014, many will travel to Brazil for the first time to see and experience football fever south of the equator, and will do so again in 2016 for the world’s oldest international sporting event, to be held in one of the most iconic and beautiful cities in the world. Visitors will come with high expectations, and the airports will be the first sight to greet them.

Nothing will change overnight. Much work needs to be done. And to successfully showcase the airport system, more than just the three airports in the first concession process need to be upgraded.

ANAC and the Brazilian government are under a great time-pressure. The transfer schedule is aggressive; full transfer of the airport operation is expected to be completed in 90 days from the contract closing. The existing airport operator (Infraero) would have a monitoring brief for the first 3 months following the full transfer. Meanwhile, the initial capital investment required in advance of the World Cup is expected to begin with the contract closing.

It will be informative to see how the Brazilian government, the new Ministry of Civil Aviation, Infraero, and ANAC will work together with private concessionaires to achieve this mission. Also it will be interesting to see the winning consortiums’ strategies to cope with a newborn airport privatization movement in Brazil. If this model is a success story, we would ask the following questions, “Will there be more to come? If so, which airports?”
<table>
<thead>
<tr>
<th>Airport Description</th>
<th>SÃO PAULO/GUARULHOS INTERNATIONAL AIRPORT</th>
<th>VIRACOPOS/CAMPINAS INTERNATIONAL AIRPORT</th>
<th>BRASÍLIA INTERNATIONAL AIRPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic (2010)</td>
<td>• 27 million passengers</td>
<td>• 5.4 million passengers</td>
<td>• 14.3 million passengers</td>
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<tr>
<td></td>
<td>• 431,000 metric tonnes of cargo</td>
<td>• 258,000 metric tonnes of cargo</td>
<td>• 33,000 metric tonnes of cargo</td>
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<tr>
<td>Infrastructure</td>
<td>• Two parallel runways (3,700 m and 3,000 m)</td>
<td>• Single runway (3,240 m)</td>
<td>• Two parallel runways (3,200 m and 3,300 m)</td>
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<tr>
<td></td>
<td>• Passenger terminal building (184,000 m²) with design capacity of approximately 25 million passengers.</td>
<td>• Passenger terminal building (34,650 m²) with 20 gates and parking positions.</td>
<td>• Passenger terminal building (63,000 m²) with 33 aircraft gates and parking positions.</td>
</tr>
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<td></td>
<td>• Surface parking lot north of the complex with approximately 3,000 public parking spaces.</td>
<td>• Air cargo facility located northwest of the passenger terminal complex including aircraft parking apron, and cargo warehouse.</td>
<td>• Numerous commercial properties are located on Airport property, including several automotive dealerships.</td>
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<td></td>
<td>• Air cargo facilities located on the west side of the airport with aircraft parking apron, cargo sorting facilities, and hangers.</td>
<td>• Approximately 72 hectares of land to the northwest of the terminal complex area have been reserved for future commercial development.</td>
<td>• Approximately 1,700 hectares reserved for military use.</td>
</tr>
<tr>
<td>Financial summary (2010)</td>
<td>• Total revenue: R$770 million EBITDA: R$386 million</td>
<td>• Total revenue: R$264 million EBITDA: R$90 million</td>
<td>• Total revenue: R$129 million EBITDA: R$33 million</td>
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<tr>
<td>SÃO PAULO/GUARULHOS INTERNATIONAL AIRPORT</td>
<td>VIRACOPOS/CAMPINAS INTERNATIONAL AIRPORT</td>
<td>BRASÍLIA INTERNATIONAL AIRPORT</td>
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<tr>
<td>CONCESSION DETAILS</td>
<td></td>
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<tr>
<td><strong>Investment highlights</strong></td>
<td><strong>Substantial potential to benefit from region overspill: Viracopos’ ultimate capacity is estimated to be 90 million passengers.</strong></td>
<td><strong>Excellent location: sole commercial service airport serving the capital of Brazil. Natural location for a domestic connecting hub.</strong></td>
<td></td>
</tr>
<tr>
<td>• Excellent location: Brazil’s primary international gateway with proximity to São Paulo’s business districts and high-income residential areas.</td>
<td>• Cargo hub focus: the airport has been developed as an alternative cargo airport to Guarulhos.</td>
<td>• Strong economic drivers: Strong GDP growth as well as increasing share of middle class.</td>
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<tr>
<td>• Strong economic drivers: Strong GDP growth as well as increasing share of middle class.</td>
<td>• Strong economic drivers: Strong GDP growth as well as increasing share of middle class.</td>
<td>• Positive and robust airline service by two major national airlines (TAM and GOL) as well as growing range of foreign flag carriers.</td>
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<tr>
<td>• Well served airline network: strong domestic carrier presence (TAM and GOL) as well as many international carriers.</td>
<td>• Positive and robust airline service environment: the airport is served by a growing low-cost carrier, Azul Brazilian Airlines, as well as TAM and GOL.</td>
<td>• Upside in non-aeronautical revenues particularly in terminal concessions, cargo, car parking and other retail.</td>
<td></td>
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<tr>
<td>• Upside in non-aeronautical revenues (e.g., duty free, car parking, and other retail).</td>
<td>• Upside in non-aeronautical revenues particularly in terminal concessions, cargo, car parking and other retail.</td>
<td><strong>Future CapEx investments highlights</strong></td>
<td></td>
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<tr>
<td>• Relatively high EBITDA margin (approximately 50% in 2010).</td>
<td><strong>Future CapEx investments highlights</strong></td>
<td><strong>Future CapEx investments highlights</strong></td>
<td></td>
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<tr>
<td><strong>Concession length (a)</strong></td>
<td><strong>Annual contribution</strong></td>
<td><strong>Future CapEx investments highlights</strong></td>
<td></td>
</tr>
<tr>
<td>• 20 years</td>
<td>• 10% of annual gross revenue</td>
<td>• Additional taxiways</td>
<td></td>
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<tr>
<td><strong>Winning bid amount</strong></td>
<td><strong>2% of annual gross revenue</strong></td>
<td>• Additional passenger terminal complex (256,000 m²) with significant increase in aircraft parking</td>
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<tr>
<td>• R$16.2 billion</td>
<td></td>
<td>• Parking structure providing significantly more parking spaces</td>
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<tr>
<td><strong>Annual contribution</strong></td>
<td><strong>Future CapEx investments highlights</strong></td>
<td>• Approximately R$ 1.38 billion until World Cup 2014; R$ 4.6 billion over the concession period</td>
<td></td>
</tr>
<tr>
<td>• 10% of annual gross revenue</td>
<td><strong>Future CapEx investments highlights</strong></td>
<td>• Three additional runways (one Code F) – 2 independent + 2 segregated</td>
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<tr>
<td><strong>Future CapEx investments highlights</strong></td>
<td><strong>Future CapEx investments highlights</strong></td>
<td>• A new passenger terminal totaling 450,000 m² and providing 88 contact stands</td>
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<tr>
<td>• Three additional runways (one Code F) – 2 independent + 2 segregated</td>
<td><strong>Future CapEx investments highlights</strong></td>
<td>• A new close-in parking structure</td>
<td></td>
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<tr>
<td>• A new passenger terminal totaling 450,000 m² and providing 88 contact stands</td>
<td><strong>Future CapEx investments highlights</strong></td>
<td>• Substantially expanded air cargo facilities</td>
<td></td>
</tr>
<tr>
<td>• A new close-in parking structure</td>
<td><strong>Future CapEx investments highlights</strong></td>
<td>• Approximately R$873 million until the World Cup, 7.8 billion over the concession period</td>
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<tr>
<td>• Substantially expanded air cargo facilities</td>
<td><strong>Future CapEx investments highlights</strong></td>
<td><strong>Future CapEx investments highlights</strong></td>
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<tr>
<td>• Approximately R$626 million until World Cup 2014; 2.2 billion over the concession period</td>
<td><strong>Future CapEx investments highlights</strong></td>
<td><strong>Future CapEx investments highlights</strong></td>
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</table>

**Notes:**
- (a) Concession length
- Winning bid amount
- Annual contribution
- Future CapEx investments highlights
4. Thailand

Addressing Airport Capacity Needs the Right Way

Only 5 years after its commissioning, Suvarnabhumi Airport in Bangkok is already approaching its capacity. Designed to accommodate 45 million annual passengers (MAP), it handled almost 43 million in 2010 and showed further strong growth in 2011. International traffic growth of 9% is in large part attributable to the Chinese tourist phenomenon that is manifesting itself across Asia. Armed with rapidly increasing spending power, mostly younger Chinese tourists are flocking to the tourist hot spots; during the Chinese New Year period this year, Suvarnabhumi handled surges of around 180,000 daily arrivals from Mainland China alone.

Suvarnabhumi Airport, located on a 3,100-hectare site in Samut Prakan Province, and roughly 30 kilometres from central Bangkok, was designed to replace Don Mueang International Airport as Bangkok’s principal international airport. During the initial years of operation, however, some traffic was transferred back to Don Mueang to permit a number of deficiencies to be rectified. In 2009, Thai Airways consolidated all of its activities at Suvarnabhumi, leaving low-cost carriers (LCCs) Nok Air and One-Two-Go as the only remaining scheduled air carriers to operate at Don Mueang. This is now the status quo assignment of carriers between the airports. Passenger traffic through Suvarnabhumi had been relatively flat in the 3 years after its opening, having been subjected to the combined effects of the global economic recession and the widely publicised political turbulence in Thailand. With regional economies emerging from the recession and the prospect of a new stable Thai government, it is expected that Suvarnabhumi will continue to show positive growth buoyed by the attractiveness and durability of Thailand as a prime air travel market.

Prior to the opening of Suvarnabhumi, Don Mueang was under immense demand pressure, handling 39 million passengers and 267,000 aircraft movements in 2005, well beyond its saturation capacity (imposed principally by what was effectively a single runway operation). In 2010, only 3 million passengers were handled at Don Mueang, while the two airports together handled around 46 million passengers.

To resolve the overall capacity issues within the Bangkok Metropolitan Area, Airports of Thailand (AOT) commissioned a Dual Airport System Study several years ago, to look at the operation of the two airports, involving various traffic allocation scenarios designed to relieve Suvarnabhumi and utilise the spare capacity at Don Mueang. The results of that study were inconclusive, however, and a number of important questions remained to be answered:

- Was there merit in a scenario where the existing allocation of traffic between the two airports be continued with limited
existing LCCs under natural growth at Don Mueang?

- Or, if this was not enough to provide relief at Suvarnabhumi, should the allocation to Don Mueang be increased to a maximum of 10 MAP, consisting of only point-to-point domestic and international LCCs?

- Or, should all air carrier traffic be relocated back to Suvarnabhumi and Suvarnabhumi investment be ratcheted up accordingly? In this case, a suitable non-air carrier role had to be found for Don Mueang.

In November 2010, on behalf of AOT, the International Civil Aviation Organisation (ICAO) engaged LeighFisher to launch the Strategic Planning Study Considering a Single Airport Scenario for Bangkok to provide the answers.

Air traffic forecasts were developed for the total Bangkok market over a 25-year period, indicating that the 100 million passenger mark would be reached within 20 years. It became obvious that although there was some relief to be gained in the early years by transferring a maximum of 10 million passengers to Don Mueang, by the end of the period there was little impact.

Previous master plans had already established that the passenger terminal complex at Suvarnabhumi could be expanded southwards to provide a major capacity boost in future years and there was adequate space for an addition of two closely spaced parallel runways within the site boundaries. The primary determinants in evaluating the practicality of the three scenarios for operation of the two airports were always going to be airspace and airfield considerations, and these were addressed as the first priority.

Airspace Considerations in Operating the Two Airports

Aeronautical Radio of Thailand Limited (AEROTHAI) operates the airspace structure supporting the existing dual airport system: Suvarnabhumi and Don Mueang International airports. This structure was examined in terms of the existing configura-

tions of the two airports and with the addition of new runways at Suvarnabhumi. With additional new procedures and new runways at Suvarnabhumi, AEROTHAI will need to give even greater priority to operations at Suvarnabhumi, and further limit operations at Don Mueang. For example, AEROTHAI could (1) impose departure release procedures requiring that departures at Don Mueang would have to call the Aerodrome/Approach Control for a departure clearance, and (2) limit the flight procedures into and out of Don Mueang to procedures that would not adversely impact Suvarnabhumi. Such limited flight procedures at Don Mueang would mean greater restrictions and delays and more circuitous and lengthy flight paths at Don Mueang. However, there still could be a low capacity operation maintained at Don Mueang, while the capacity of Suvarnabhumi would likely be unaffected because of the priority given to it.

This analysis suggested that the future of the airport infrastructure in Bangkok lay in the use of Suvarnabhumi as the only air carrier airport, while Don Mueang would play a supporting role in handling military, state, corporate aviation, and other non-scheduled services.

The Need for Additional Runways

Currently, independent instrument landing system (ILS) approaches are not conducted at Suvarnabhumi Airport. In the future, it is expected that mixed operations of arrivals and departures on both runways will become the normal mode of operation as traffic increases. The separation
between the two existing parallel runways is approximately 2,200 metres, which is more than adequate to support independent parallel ILS approaches.

When compared with the forecast peak-hour demand, the weighted average hourly capacity (53 to 55 movements per hour) of the two runways under today’s segregated operating scenario has already been reached. The capacity of the existing two-runway system operating in independent arrivals and departures mode (75 to 80 movements) will be reached in the year 2015 or soon thereafter. Additional runways are required in the configurations indicated in previous master plans, in the following sequence:

- A third closely spaced parallel runway to be added on the western side of the airport as soon as possible
- A fourth closely spaced parallel runway to be added on the eastern side in the 2020 timeframe to maximise the airside capacity of the airport within the existing site boundaries
- A fifth far-spaced parallel runway to be added on the eastern side of the airport on additional land to be acquired in the future to maximise the ultimate configuration of the airfield

In terms of its productivity in processing passenger volumes through its airside infrastructure, Suvarnabhumi is one of the most efficient in the world, with a current average of 159 passengers per aircraft movement. LeighFisher believes that this level of throughput will likely remain reasonably constant in future years with the normal gravitation to upgauging being countered by the increasing number of narrow-bodied aircraft in the mix deployed by LCCs. Other bodies of opinion, including that of IATA, contend that the number of passengers per aircraft movement may increase from 159 to 184 over the next 20 years. Should this trend come to pass, then the aircraft movement forecast will be lower than that established by LeighFisher and the requirement for the fourth and fifth runways may be delayed for an additional 3 to 5 years.

Priority has to be given to development of new airside and terminal infrastructure at Suvarnabhumi to accommodate all commercial passenger traffic for the Bangkok Metropolitan Area. The transfer of up to 10 MAP of commercial traffic to Don Mueang would not be conducive to maximising the required airfield capacity at Suvarnabhumi.

**Terminal Complex Expansion – The Domestic Annex Concept**

The saturation capacity of Suvarnabhumi for development within the existing site boundaries, including four runways, is estimated at 80 MAP, of which 57 MAP will be international and 23 MAP will be domestic. This capacity is expected to be reached by the year 2025, at which time there will be 500,000 annual aircraft operations and 2.1 million tonnes of cargo processed through the airport.

Passenger terminal expansion and modification is needed almost immediately. Previous master plans show...
the construction of mid-field satellites and expansion of the main core processor building. The LeighFisher analysis has indicated that by the year 2020, if the terminal continues to operate as an integrated international-domestic facility, there will be pressure on a number of processors and spaces within the terminal building. There are insufficient passenger security screening points and emigration processors at the present time. Additional space will be required for outbound emigration queuing, inbound immigration queuing, international bag claim, domestic baggage make-up and breakdown operational areas, concessions, and airline lounges to meet the 2020 forecast demand. There is a shortage of remote stand bus lounges to fully utilise the available remote stands for international and domestic passenger processing.

The increments of required expansion are composed of a mix of international and domestic traffic and the simple addition of a satellite in itself would not resolve the growth issues in the terminal processor, as well as the issues of maintaining separation of international and domestic passengers. The satellites have to be restricted to either international or domestic passengers because the access to the satellite will be provided by an underground automated people mover boarded in the secure sterile area, beyond emigration and security.

Furthermore, previous recommendations to expand the core building by adding more modules at each end will be difficult to implement while the building is operating at capacity. Even if this were overcome through inventive construction staging techniques, the finished expansion would not have direct access to curbs at each end. The expansion is further complicated by the fact that the mechanical systems must be integrated so that the new system and new loads do not adversely influence the operation of the system in the existing structure. The existing system is a "stratified air displacement" system and this has to be replicated in the expansion modules.

The LeighFisher solution is to relocate the domestic processing, and once this is done, reconfigure the domestic processing areas and Concourses A and B to provide additional international processing capabilities. This could be done with minimal disruption to normal operations.

In the short term, this solution is best accomplished by the development of a stand-alone Annex to Concourse A to handle all domestic arriving and departing passengers. A site to the north-east of the main terminal building has been examined, where the possibility exists of building a facility along a northward extension of Concourse A. This extension would be connected to Concourse A to allow for the transfer of arriving and departing passengers between the domestic and international terminals.

The Way Forward for the New Government

To achieve a balanced capacity of 80 MAP will require a total investment of more than US$2 billion in today’s dollars. A first step for AOT is to engage project management capabilities to cement the next phase of the expansion plans, scope the design and construction activities for the phased expansion, and to fine-tune the development costs. Further planning work is required, supported by simulation techniques to test the efficacy of implementation of the improvements during construction. Financing has to be assembled and the regulatory regime needs to be re-examined to ensure that the capital program can be supported by user charges.

With the new Royal Thai Government in place, blessed with an iconic airport and a proud aviation heritage, now is the time to seize the opportunity to defend and enhance Bangkok’s standing as a major aviation hub in Southeast Asia.
5. Aviation in the Developed World

Driven by Cost and Revenue Initiatives, Not Exponential Traffic Growth

Aviation in the developed world is characterized by mature domestic and international airline networks, a population with above average incomes and a high propensity to travel, and airport facilities at or approaching capacity. As a result, traffic growth is limited and airlines and airport operators must identify opportunities to improve financial and operating performance.

Shifts in Global Aviation

The rapid growth of developing economies such as Brazil, China, and India has resulted in a shift in global aviation from Europe and North America to the Asia-Pacific region and Latin America. Although advanced economies accounted for the largest share of world capacity (in terms of scheduled departing seats) in 2011, total capacity has remained relatively unchanged since 2000. The lack of capacity growth in advanced economies reflects, in part, airline efforts to reduce costs by flying fewer aircraft and increasing average load factors (the percent of seats occupied) and to increase revenue by limiting capacity, thereby improving their ability to charge higher airfares. Airlines in advanced economies have increasingly relied on the development of international service to fuel traffic and revenue growth. The liberalisation of international aviation-related treaties, including the creation of more than 100 U.S. Open Skies agreements, is expected to facilitate future growth in international service, although this growth will be shared by airlines in developing economies with the financial resources to build their fleets. According to the global market forecasts prepared by Airbus and the Boeing Corporation, airlines in the Asia-Pacific region are expected to account for 34% of the world aircraft fleet in 2030, compared with a 22% share in 2010. Strong growth is also forecast for Latin America, with a doubling of the fleet by 2030 (to 8% of the world aircraft fleet).

The Role of Airline Mergers

With the exception of the mergers of Air France and KLM-Royal Dutch Airlines in 2004, and British Airways and Iberia in 2010, most of the recent mergers have been between U.S. airlines. In contrast to the Air France-KLM and British Airways-Iberia mergers, in which each airline continues to operate separately, mergers of U.S. airlines have resulted in single-branded entities with consolidated operations and facilities. The result is a combined airline that serves a greater number of destinations within the United States and throughout the world than the individual airlines before the merger. For example, as a result of Delta Air Lines’ merger with Northwest Airlines in 2008, the combined airline (including regional affiliates) now serves 28 additional U.S. destinations and 15 additional world destinations, more than Delta alone served before the merger. Similarly, as a result of United Airlines’ merger with Continental Airlines in 2010, the combined airline (including regional affiliates) now serves 50 additional U.S. destinations and 79 additional...
world destinations, more than United alone served before the merger. The objective from a U.S. airline perspective is to strengthen the competitive position of their alliances by expanding their U.S. networks.

**Airline Alliances Redefine the Competitive Landscape**

Airline alliances emerged from a need to create seamless international air travel. Globalised industries increasingly require access to local markets beyond a country’s primary international gateway. In response to this requirement, large, strategic, branded airline alliances were formed, together with code-sharing and other marketing arrangements, to mitigate the effects of restrictive bilateral agreements, ownership restrictions, and licensing and control regulations. Airlines based in different countries formed alliances to facilitate access to specific markets and to leverage their local knowledge, relationships with suppliers, and specialised marketing and distribution channels. These alliances are summarised in the chart above.

With the development of airline alliances, the pursuit of passenger market shares shifted from competition among airlines to a contest between airline alliances. In 2010, the three global airline alliances – Star Alliance, SkyTeam, and oneworld – accounted for two-thirds (66%) of scheduled departing seats at U.S. airports, up from 43% in 2000. During the same period, the low-cost carriers doubled their share of U.S. airport departing seats. The participation of U.S. legacy airlines in global alliances has allowed them to remain competitive with the low-cost carriers by expanding their global networks, making their network service more attractive to business travelers, and accessing markets that are not yet subject to low-cost carrier competition.

Of the three global alliances, the Star Alliance accounted for the largest share of capacity at U.S. airports in 2010, except at medium-sized airports. The large low-cost carrier share at medium-sized airports reflects, in part, the strategy of these carriers, such as Southwest Airlines, to provide service to secondary airports, particularly in multi-airport regions. At this time, the three global alliances do not include any U.S. low-cost carriers, largely because the complexity and integration costs of alliances are inconsistent with the business model of these carriers. There are, however, examples of simplified and less costly forms of alliance cooperation among U.S. low-cost carriers, such as JetBlue Airways’ arrangements with Aer Lingus, American Airlines, El Al Israel Airlines, Emirates, Icelandair, LAN Airlines, Lufthansa German Airlines, and South African Airways, as well as Southwest’s code-share arrangement with Volaris, the Mexican airline.

**Airline Alliance Cooperation Takes Many Forms**

Airline alliance cooperation can take many forms and is changing in response to new challenges, including increased competition from low-cost carriers, the high cost associated with...
developing service to new international destinations, and the volatility of fuel prices. The figure below illustrates the range of airline alliance cooperation as it exists today. The range extends from the least alliance cooperation—where there is limited cooperation on specific routes (e.g., interlining, frequent flyer program credits, and airline lounge access) – to the most alliance cooperation, where there is a merger-like integration. The most integrated airline alliances include antitrust immunity agreements; revenue, cost, and benefit sharing; and “metal neutral” joint venture arrangements.

Global Considerations

The maturity of aviation in the developed world, combined with rapid economic and aviation growth in developing economies, will require airlines and airport operators to evaluate the global aviation market. As airlines increasingly rely on global alliances, airline service at airports is likely to be evaluated in terms of its contribution to an alliance’s market share and overall profitability. Future decisions about service at a specific airport may be influenced by the intensity of fare competition and the contribution of each additional passenger to the bottom line. The challenge for airport operators making financial and planning decisions is to consider the changing role of their airports in accommodating global airline alliances.
In August 2011, the UK Department for Transport (DfT) produced its latest forecasts for air traffic in the UK, and in particular for the activity levels of the UK’s airports. These forecasts are highly sensitive politically since they are used by the Government to guide and support its policy decisions in a number of controversial areas including airport capacity development and carbon dioxide emissions. The previous forecasts were produced in 2007 and 2009, so the latest forecast gives some interesting clues on how the Government sees life after the global financial crisis and how it can justify its current policy of no new runways for the UK’s crowded South East (London) airports (see Chart 1 and Chart 2). In the process, the forecast may provide some insights into how governments deal with these issues in other countries.

Broadly, the DfT faces five main pressures linked to airport policy:

- The frequently expressed concern at the lack of runway capacity in South East England: BAA’s failure to develop further runways was a major factor used by the Competition Commission to justify its break up
- The vociferous opposition to the development of additional runways at each of the main airports in the South East, and in particular at London Heathrow where one is most needed
- The resulting Government policy (a manifesto pledge at the time of the 2010 election) that no new runways would be constructed
- The need to counteract suggestions that aviation growth was incompatible with the Government’s professed carbon dioxide targets
- A desire to support the economic case for a high-speed railway

Chart 1: THE DfT UNCONSTRAINED UK AIR TRAFFIC FORECASTS FALL OVER TIME

<table>
<thead>
<tr>
<th>Year</th>
<th>DfT 2007 forecast (multiplier 1.5)</th>
<th>DfT 2009 forecast (multiplier 1.4)</th>
<th>DfT 2011 forecast (multiplier 1.3)</th>
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Chart 2: LONG-TERM TREND IN UK AIRPORT PASSENGERS

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The "wrong" forecast could potentially create significant problems in a number of these areas.

**Historical Performance**

So what is the historic context against which the DfT must place its forecast?

Overall, the long-term trend is one of continued growth, with only three notable blips – the last two being 9/11 and the recent global financial crisis which was preceded by a price hike in oil, as shown in Chart 3. Furthermore, 2010 itself was also badly affected by the eruption of the Eyjafjallajökull volcano in Iceland and the subsequent disruption to air travel in Europe due to the ash cloud in April of that year. Looking back, it is now possible to take the view that some of the growth in traffic in the period 1996 to 2011 was due to a combination of historically low fuel prices and resultant low air fares in some markets, as illustrated by the theoretical long-term trend line over this period shown in Chart 2. This is the period when low-cost airlines took off, first at the London airports and then at most major regional airports.

One of the key drivers of air transport demand is the economy, most often related to growth in real income (or GDP). As with other markets, the UK market shows a long-term trend towards maturity (i.e., decreasing elasticity with respect to GDP over time). Chart 4 shows how the UK aviation market has evolved (using a 10-year rolling average of traffic and GDP growth as a method for smoothing out the cycle). Back in the 1970s, the UK income multiplier was nearly 3.5; it has declined steadily to 2.5 by 1990 and 2.0 by 2000. From 2008 onwards, it has fallen below 1.5.

This trend is something that can be observed in most reasonably open aviation markets such as the United States, but may not be so apparent in those markets where regulations still control market access.

It is interesting to see this relatively consistent long-term trend against what has been happening over the past 10 years. In the UK at the time, to the DfT as well as others, all seemed to be going unusually well for much of the period, with many headlines talking of the low-cost carrier boom. However, even before the recent financial problems, growth was being held back by two increases in underlying costs: due to fuel and progressive increases in the UK Air Passenger Duty (APD) on all tickets. The resulting growth rates were well below those achieved in earlier decades.

Overall, the UK market grew by an average of 1.6% per annum and just 0.9% compound annual growth rate in the South East market. Correcting for the estimated 4.8 million passengers lost due to the ash cloud in 2010 suggests that the long-term growth was 1.8% per annum over the period. The decade can be divided into distinct periods. Pre-2007, there was significant growth, but with noticeable differences in growth rates. The UK as a whole grew at 4.2% per annum, but it was the regions which benefited from the rapid growth of direct low-cost flights, with regional growth reaching 6.5% per annum partly at the expense of the South East. This trend has been partly reversed following the financial shocks of 2008 onwards. Traffic has been declining since 2007 with falls of 9% in the South East and 16% in the regions. Even correcting for the ash cloud in 2010, traffic has fallen 10% since 2007. If one assumes that some...
of the recent growth was due to the combination of low fuel prices and the boom in low-cost flights, then removing this element from 1996 to 2011 produces a trend growth of 3.2% per annum or an income multiplier of 1.6 (as represented by the underlying trend-line shown in Chart 5). The 1.6 multiplier for 1996 to 2011 would fit well with the DfT forecast of 1.3 for the future.

The Future According to the DfT

So, according to the DfT, what are the long-term prospects for growth against a background it sees as dominated by high fuel prices, the continuation of the APD (at its current levels), and the addition of the costs associated with the European Union (EU) Emissions Trading System (ETS) from 2012?

Unsurprisingly perhaps, the DfT is assuming that the UK market continues to mature with ever-lower multipliers. From the 2009 forecast, the GDP multiplier has been lowered from 1.4 to 1.3 – both of which are lower than the current trend figure of 1.5. In addition, the DfT forecast also includes the impacts of three factors:

- Continuing high fuel prices
- The EU ETS
- High Speed 2 (HS2), the planned high-speed railway link running from the South East to the regions to the north of England, eliminating many domestic air trips

The DfT does not publish an unconstrained forecast. However, using the information it supplies, it is possible to come up with the forecast shown in Chart 5.

What is striking about the DfT’s 2011 forecast is firstly just how much of a decline there has been in traffic since 2007 and secondly, no apparent above-trend recovery period post the global financial crisis. From where things stand today, the assumption of no above-trend recovery period looks plausible given current levels of global economic uncertainty. The lack of even a partial recovery may also be a reflection that the market has fundamentally changed, with high fuel prices and increased APD leading to a permanent diminution in some price-sensitive travel markets, such as the domestic market and the market for short leisure breaks. The slight slowing demand around 2030 is due to the expected impact of HS2 on domestic demand.

So, in contrast to the 2009 forecast, not only is there now no recovery from the current financial pressures, but long-term growth has also slowed markedly, a powerful combination which means that the UK now will take almost 10 years to recover the level of traffic achieved in 2007. In LeighFisher’s view, while depressing, this aspect of the forecasts appears plausible.

The DfT’s Constrained Forecast

The DfT’s pessimism on the market as a whole naturally has an important impact on the capacity constraints that need to be overcome at individual airports.

As noted earlier, a key long-term feature of the UK air transport market is the impact of constraints in the South East, arising from a chronic shortage of runway capacity at Heathrow and Gatwick airports.
While there has been much discussion in the early months of 2012 regarding a brand new airport to be located somewhere in the Thames Estuary, and the UK government has agreed to formally study the options, the advent of such an airport is many decades into the future.

As a result, it is the constrained rather than the unconstrained forecast which is of crucial importance. The central forecast for the South East and the regions is shown in Chart 6. The forecast assumes maximum use of existing South East runways and no new runways. To keep consistent with the historic data, an allowance has been made for smaller airports omitted from the DfT forecasts in future years.

What this forecast implies is that all the growth from 2030 onwards occurs in the regions and not in the South East. Whilst the regions have historically grown faster than the South East airports (due to the opening of direct services), the abrupt halt in growth is a step change assumption. As the DfT itself states (p. 57, 2.112) “The forecasts should be interpreted as implying that all the London airports are at full capacity from around 2030 onwards.” This assumption is of course in line with current government policy, but it means there is no explicit policy consideration regarding unmet demand in the South East and the wider implications of this might have for the UK economy as a whole. Although not stated, it is likely that Government policy is for unmet demand in the South East to decant to the regions. How this is achieved has been left unanswered.

**How Will the Impact of These Constraints be Handled?**

This is probably something the UK Government does not want to debate explicitly. Implicitly, the Government appears to be hoping market developments will encourage more traffic to be served in the UK regions:

- HS2 rail service will reduce some (but by no means all) UK domestic traffic into the South East
- Airline economics will encourage more flights direct from the regions, most probably in the form of low-cost airline activity
- Differential APD or other taxes could also help to suppress or divert demand from the South East, if need be

However, putting aside the use of increased taxation to suppress demand in the South East, it is possible to construct a plausible alternative unconstrained forecast for the South East, taking the UK unconstrained forecast and assuming the continuation of the growth differential that existed between the South East and the regions during the 2000-2010 period.

Using this approach produces the forecast shown in Chart 7, a chart the UK Government probably does not want to see. It shows a substantial unfilled demand in excess of capacity from 2030 onwards. The resultant forecast suggests that a new runway is required in the South East from about 2030 and will reach full capacity by 2050. If growth were faster than the DfT’s central case or if there was a mismatch between demand and supply, runway capacity will run out earlier, as early as 2020 under some scenarios.

**Is High Speed 2 the Answer to the Government’s Problems?**

A number of structural changes will be needed in order that no additional runway is required in the South East:

- A reduction in the proportion of origin and destination (O&D) passengers in the regions using South East airports (currently 14% of total UK passengers travel from the regions to the South East by surface modes to access flights)
- A reduction in the proportion of international-to-international transfer passengers at over South East airports (probably using hubs in other countries)
- A corresponding increase in regional O&D passengers flying direct from regional airports

A scenario along these lines is represented in Chart 8.

Together, these changes will have to reduce demand in the South East by an estimated 30 million passengers by 2050 to meet the Government’s objectives.
The DfT gives a few clues to its own thinking, the most interesting of which is the change in the transfer market as shown in Chart 9.

In the DfT scenario, the proportion of international-to-international traffic falls, but what is most striking is the assumption that the domestic-to-international transfer market collapses completely with no forecast of a corresponding increase in transfers at non-UK airports (e.g., Amsterdam, Frankfurt, or Dubai). The assumptions behind this particular outcome are not explained by the DfT. However, it is likely that the DfT assumes that HS2 will be a major contributor to this change.

While the DfT’s forecasts in this area are consistent with UK government policy priorities as outlined earlier, we believe the assumptions to be challenging.

**Conclusion**

As the first major country forecast post the global financial crisis, the DfT’s forecast is of major interest to the global air transport industry. It is possible to identify four major themes:

- Trend growth is going to be lower in the future, driven by reduced income multipliers as the market is now more mature
- No recovery of traffic lost during the global financial crisis is expected, probably due to the permanent reduction in some of the price-sensitive elements of the market
- High-speed rail is expected to capture a significant proportion of short-haul traffic
- There is expected to be a collapse in the domestic-to-international transfer market in the UK but not in the international-to-international transfer market

As has been illustrated at the beginning of this article, the DfT’s forecasts have changed radically over a period of 4 years. Conveniently, the changes enable the Government to claim that no further runways are required in the South East. It will be interesting to see whether some or all of these themes become true in the long term. Meanwhile, a number of issues remain unanswered:

- What happens if demand is higher than forecast?
- What happens if there is no HS2, or the diversion effects are not as high as forecast?
- What rationing or diversion mechanisms will the UK Government use to divert traffic to the regions and will these be effective in practice?
7. Energy Savings Performance Contracts

A Strategy to Reduce Airport Energy Costs

Spurred by higher and unpredictable energy prices, existing and anticipated climate change legislation, and a weaker than expected economic recovery in the developed economies, airport operators around the globe are controlling costs by managing their facilities' energy needs while also improving their overall sustainability performance. One preferred strategy embraced by airport operators to reduce energy costs is through an Energy Savings Performance Contract (ESPC). A guaranteed ESPC is a low-risk option for airport operators worldwide to improve energy efficiency and achieve cost savings in the face of rising energy prices and volatility, all without the upfront expense for an airport operator. This article summarises the key elements and benefits of an ESPC and the changes to energy management policies and procedures that could be used by airport operators to reduce energy costs.

An ESPC is a performance-based financial mechanism whereby utility bill savings that result from the modernisation of energy systems pay for the cost of the project (generally over a 10- to 20-year timeframe). An Energy Service Company (ESCO) is a commercial business that provides a wide range of comprehensive energy solutions, including design and implementation of energy-saving projects, energy conservation, power generation and energy supply, and risk management. Based on an in-depth energy audit, the ESCO designs an energy-efficient solution, installs the required elements, and maintains the system to ensure energy savings during the contracted payback period. ESCOs can subcontract to smaller firms, referred to as Energy Service Providers, that specialize in niche energy conservation technologies, such as lighting or windows.

How Risk to an Airport Operator is Minimised Through an ESPC

An ESPC minimises risk to an airport operator in the following ways:

- The ESCO finances the upfront cost or works with the airport operator to develop a custom financing plan with a bank or insurance underwriter, whereby the airport operator can contribute some or all of the upfront capital.
- The ESPC acts as insurance for the airport operator by including language obligating the ESCO or other third party to pay the difference to the airport operator, if at any time the actual energy efficiency savings fall short of the guaranteed savings. Such financial certainty, coupled with technical know-how provided by ESCOs, makes an ESPC an attractive opportunity for an airport operator looking to achieve reliable energy efficiency savings.

In addition to lower utility bills, an ESPC allows an airport operator to target and reduce its greenhouse gas (GHG) emissions by upgrading to lower carbon technologies and reducing energy demanded. These GHG emissions reductions, if calculated from a baseline and verified post-ESPC, may, in certain cases, be sold as environmental credits, which add further to the financial incentive of an ESPC.
guaranteed savings agreed in the contract

- An arrangement with an ESCO can leverage the expertise of world-class engineers and niche subcontractor Energy Service Providers (ESPs) and incorporate the latest proven technology to keep airport operators ahead of the cost curve
- Because it is results-oriented, an ESCO guarantees savings for an airport operator
- Most ESCOs work within established industry guidelines and can take advantage of incentives and tax rebates developed for energy efficiency programs by local and national agencies
- A third party advocate can outline the process, risks, and objectives and can effectively communicate with the ESCO throughout the process

Energy Efficiency Promises Opportunity for Airport Operators

Airports can take a preventive financial stance by proactively pursuing energy efficiency.

Energy costs already represent a significant portion of airport operating expenses, often between 10% to 15% of an airport’s total operating budget. Any additional cost or increased price volatility can significantly impact airport operators, many of whom operate on small margins.

Authorities like the U.S. Energy Information Administration and the International Energy Agency forecast that global energy prices will remain on an upward long-term trend due to population growth and industrial development, especially in the developing world. While economies in the Organisation for Economic Co-operation and Development (OECD) countries are expected to grow their energy consumption at a relatively modest annual growth rate of 0.6%, non-OECD countries are projected to consume on average 2.3% more energy annually until 2035. This disparity will result in non-OECD economies consuming 38% more energy than OECD economies by the year 2020. And while local conditions strongly influence commercial energy prices, accelerated energy demand from developing economies around the world will undeniably lead to higher energy prices in both developed and developing economies.

To minimise the financial uncertainty inherent in rising energy costs, airport operators can take advantage of an efficiency gap between outdated technologies at airport terminal buildings and cutting-edge lighting, HVAC, water heating, and component energy conservation technologies available in the marketplace today.

Energy Efficiency Results through an ESPC at A.B. Won Pat International Airport, Guam

LeighFisher worked with the A.B. Won Pat International Airport Authority in Guam to manage the procurement and contracting process with an ESCO at A.B. Won Pat International Airport.

The successful ESCO conducted a thorough energy audit to identify opportunities to reduce energy consumption and highlighted energy savings in excess of $1.6 million annually (roughly 25%) through the implementation of several energy efficiency projects, including (1) chiller upgrades, (2) cooling tower refurbishment, (3) a new energy management system, (4) new lighting retrofits, and (5) new HVAC equipment. The energy projects will be delivered under an energy performance contract with the ESCO and financed through guaranteed energy savings so that the Airport Authority will not need to front any capital.

LeighFisher coordinated with Airport Authority management to (1) draft a Request for Qualifications document, (2) develop scoring criteria and weighting, and (3) provide an independent review of proposals against established criteria. The Airport Authority also received assistance during the negotiations with the selected ESCO to ensure that its interests would be protected, and in the execution of a 10-year performance contract.

Energy Efficiency Improvements

There are four broad categories of energy efficiency improvements that could be used by airport operators to reduce energy costs.

1. Energy-related operations and maintenance and management procedures. The installation of a Building Automation System, for instance, can automatically implement the best energy management modes relative to use, time, season, and climate, and thereby maximise energy efficiency outcomes and financial returns.
2. Cost-effective Energy Conservation Measures (ECMs).

These include the installation of component technologies, available from both ESCOs and ESPCs, to reduce energy use in existing lighting, HVAC, and water heating, as well as in the latest baggage handling and people moving equipment. ECMs vary in return on investment and in most cases it makes sense to deploy a portfolio of initiatives to justify an overall satisfactory economic return. Lower-cost incremental component technologies offer a shorter payback period in comparison with major system replacements.

Example ECMs include the following:

- Lighting and controls upgrades
- Installation of Building Automation Systems or upgrades to an existing system
- HVAC system upgrades
- High-efficiency motors and motor systems installation
- High-efficiency pump installation
- Variable speed drive installation
- Water and wastewater system improvements
- Central utility plant and distribution systems improvements
- Installation of heat recovery systems
- Installation of electrical load management devices
- Installation of building and roof insulation
- Passenger movement and baggage handling system improvements

3. Upgrades of major energy-consuming systems. The energy savings from the replacement and optimisation of a central utility plant or HVAC system can be significant. Cutting-edge HVAC technologies are more capable of significant energy efficiency when combined with HVAC component technologies. A major energy-consuming system upgrade will involve significant upfront capital spending.

4. Measurement, Verification, and Reporting (MV&R) process. Progress of the ESPC can be tracked using a comprehensive MV&R program. Additionally, incorporating a thorough MV&R process enables airport operators to compare energy efficiency savings against available baseline data and evaluate the success of investments over time. Also, many airport operators are required by government agencies to report and actively reduce their carbon footprint; the data gathered through a MV&R process provides valuable information to that end.

While cost savings from both ECMs and the replacement of major systems are frequently sizable and stable, they do require significant capital investments which can take a number of years to pay off. The availability of ESCO financing versus airport-financing of energy efficiency improvements allows airport operators to take advantage of these opportunities immediately.

A reduction in energy and maintenance costs for airport operators can be realised in unlikely places. For example, a recent baggage carousel replacement by Globe Composite Solutions, Ltd. netted a 5-year internal rate of return of 140% through a 60% reduction in annual energy consumption and reduced carousel maintenance. The project

ENERGY EFFICIENCY RESULTS THROUGH AN ESPC AT AUSTIN-BERGSTROM INTERNATIONAL AIRPORT

Ameresco, a U.S.-based ESCO, carried out a detailed energy audit at Austin-Bergstrom International Airport.

In 2008, Ameresco, a U.S.-based ESCO, was selected by the City of Austin (Texas) Energy Department to deliver energy savings at the Austin-Bergstrom International Airport. Ameresco carried out a detailed energy audit of the facilities and identified opportunities to cut annual energy costs by over a quarter of a million dollars (a 12% saving over the baseline period September 2006 through August 2007). The projected energy savings allowed the City of Austin’s Aviation Department and Ameresco to contract for a short payback period which would guarantee positive cash flow after 6 years from the start of its investment. The program is now under way and seven energy upgrades are being implemented to slash energy consumption by over 2 million kWh yearly: (1) lighting upgrades, (2) lighting controls, (3) chiller replacement, (4) boiler plant upgrades, (5) energy management system upgrade, (6) water conservation, and (7) building infiltration. The cumulative ESPC financing totalled $1.5 million, which includes the detailed energy audit, a 10% Ameresco project management fee to work with subcontractors, and the purchase and installation cost of the ECMs.
extended the life of the carousel system through the use of composite replacement parts instead of a much more expensive system overhaul.

**Opportunities for Airport Operators to Work with ESCOs**

Airport operators should familiarise themselves with the range of ESCOs operating in the international market, assessing these firms on a variety of measures from corporate financial strength to individual team members’ technical expertise. Selecting an ESCO that marries its prioritisation of energy efficiency projects to an airport’s broader energy and greenhouse gas reduction plan, master plan, and other strategic goals will ensure that the final contract acts as a tailored delivery agent for the airport operator as well as a commercially viable project for the ESCO and airport operator. For these reasons, an airport operator should seek expert, independent advice throughout the process, from initial procurement, to the selection of the ESCO, and, ultimately, contract negotiation.

When designed and executed well, an ESPC can minimise financial effects of future energy price volatility for an airport operator, improve the performance of facilities, generate utility bill savings once the contract period is over, and, in some cases, deliver additional, near-term cost savings above and beyond savings guaranteed from the ESCO during the contract period. Money saved in the future can be invested elsewhere, such as in the generation of renewable energy to provide a clean and secure source of electricity to meet remaining needs.

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For over 65 years, LeighFisher has assisted airport managers and operators, investors and senior-level government officials around the world on major infrastructure and development projects and transactions. Our services include business advisory, facility and operational planning, environmental and sustainability planning, management and strategy, and government advisory services. We consider physical and commercial aspects together to ensure that recommended actions are affordable and can be implemented.

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