Measuring Airline Operating and Delay Costs

2011 ACI-NA 20TH ANNUAL CONFERENCE AND EXHIBITION
San Diego, CA, October 16-19, 2011

Presented by Garfield Eaton
Ricondo & Associates, Inc.
### Components of Airline Costs at an Airport

#### #1 Airline Rates & Charges
- Terminal Rents
- FIS Fees
- Baggage System Fees
- Landing Fees
- Gate/Apron Fees
- RON Fees

#### #2 Airport Costs Paid Directly by Airlines
- Terminal Special Facility Debt
- Terminal O&M (Janitorial, Utilities, Etc.)
- Loading Bridges (Capital and O&M)
- Deicing costs
- Baggage Consortium Fees

#### #3 Airline Operating & Delay Costs
- Total Aircraft Taxi Time Costs (including taxi-in and taxi-out delays)
- Enroute Delays
- Gate Delays
- Baggage Systems and mishandled baggage
- Passenger Ticketing and Bag Check
Airline operating & delay costs can be a substantial contributor to an airline’s costs of doing business at an airport.

Focus is on airline operating costs that are within airport’s control and can be lowered through improved efficiency, reduced delays, and shorter passenger travel times. Examples include:

- Aircraft operations and delays
- Baggage systems and handling
- Passenger processing (ticket counters, security checkpoints, etc.)

Can be used to:

- Compare costs and relative “efficiency” of operations at different airports
- Help justify investment in certain capital projects and gain airline approvals
Aircraft operations and delays represent one of the largest airport costs to airlines.

Detailed performance data can be obtained from the FAA Aviation Performance Metrics (APM) system:
- Average taxi-in and taxi-out times and delays
- Average enroute delays
- Gate delays

**Example Airport**

<table>
<thead>
<tr>
<th>Gate Time</th>
<th>Taxi Out Time</th>
<th>Airborne Time</th>
<th>Taxi In Time</th>
<th>Gate Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.7 mins</td>
<td>11.2 mins</td>
<td>N/A</td>
<td>16.4 mins</td>
<td>5.2 mins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.2 mins</td>
<td>5.6 mins</td>
<td>3.2 mins</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

Total Average Aircraft Taxi Time and Delays at Airport = **52.3 Minutes per Departure**
Aircraft Operating Costs are estimated by ATA as $60.99 per minute in CY 2009.

Assuming 150 enplanements per departure, 52.3 minutes per departure equates to approximately $21 per enplanement.

Airline delay cost estimates are also available from University of Westminster, “European airline delay cost reference values”, March 2011.
<table>
<thead>
<tr>
<th>Rank</th>
<th>CPE</th>
<th>Airport</th>
<th>Airport Rates &amp; Charges plus Airline Operating &amp; Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$2.40</td>
<td>A</td>
<td>A&lt;br&gt;$15.76</td>
</tr>
<tr>
<td>2</td>
<td>$3.93</td>
<td>B</td>
<td>D&lt;br&gt;$24.40</td>
</tr>
<tr>
<td>3</td>
<td>$5.93</td>
<td>C</td>
<td>G&lt;br&gt;$25.30</td>
</tr>
<tr>
<td>4</td>
<td>$6.74</td>
<td>D</td>
<td>B&lt;br&gt;$25.90</td>
</tr>
<tr>
<td>5</td>
<td>$8.81</td>
<td>E</td>
<td>I&lt;br&gt;$26.24</td>
</tr>
<tr>
<td>6</td>
<td>$11.06</td>
<td>F</td>
<td>C&lt;br&gt;$27.60</td>
</tr>
<tr>
<td>7</td>
<td>$11.09</td>
<td>G</td>
<td>J&lt;br&gt;$28.05</td>
</tr>
<tr>
<td>8</td>
<td>$11.24</td>
<td>H</td>
<td>H&lt;br&gt;$30.17</td>
</tr>
<tr>
<td>9</td>
<td>$12.67</td>
<td>I</td>
<td>F&lt;br&gt;$31.43</td>
</tr>
<tr>
<td>10</td>
<td>$13.80</td>
<td>J</td>
<td>M&lt;br&gt;$31.54</td>
</tr>
<tr>
<td>11</td>
<td>$14.47</td>
<td>K</td>
<td>L&lt;br&gt;$35.97</td>
</tr>
<tr>
<td>12</td>
<td>$14.93</td>
<td>L</td>
<td>K&lt;br&gt;$36.12</td>
</tr>
<tr>
<td>13</td>
<td>$17.61</td>
<td>M</td>
<td>E&lt;br&gt;$36.26</td>
</tr>
<tr>
<td>14</td>
<td>$25.52</td>
<td>N</td>
<td>O&lt;br&gt;$48.53</td>
</tr>
<tr>
<td>15</td>
<td>$27.04</td>
<td>O</td>
<td>N&lt;br&gt;$49.33</td>
</tr>
</tbody>
</table>
Globally, airlines experienced nearly $3.0 billion in costs due to mishandled baggage in 2010.

- Estimated to be ~$100 per bag or $2.41 per Enplanement

Study examined costs from lost bags and delayed aircraft associated with different baggage systems.

Computer simulation was used to estimate future mishandled bags and delayed flights.

<table>
<thead>
<tr>
<th></th>
<th>Current Baggage System</th>
<th>Fully-Integrated Baggage System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Mishandled Bags</td>
<td>7,868</td>
<td>1,800</td>
</tr>
<tr>
<td>Annual Departure Delay</td>
<td>4,775</td>
<td>32</td>
</tr>
<tr>
<td>Annual O&amp;M Cost ($000's)</td>
<td>$1,723</td>
<td>$4,779</td>
</tr>
<tr>
<td>Estimated Capital Cost ($000's)</td>
<td>N/A</td>
<td>$115,544</td>
</tr>
</tbody>
</table>
• PV of Net Benefits was nearly $30 million of savings over 14 years
• Resulted in $0.44 CPE increase vs. $0.80 net benefit per enplanement by Year 14 ($0.36 CPE Net Benefit)
Example Improvements to Reduce Airline / Airport Operating and Delay Costs

**Airfield Capacity & Delay Improvements**
- New Runway and/or Runway Exits
- New Taxiway and/or Improved Aircraft Taxiing
- New Hold Pad
- New RON Aprons

**Weather-Related Improvements**
- Improved Navigational Aids / Approaches
- Expanded / Improved De-Icing Facilities
- Additional Snow Removal Equipment

**Terminal Capacity & Efficiency Improvements**
- Additional Aircraft Gates
- Expanded/Improved Security Processing
- Expanded/Improved Baggage System
- Expanded/Improved Passenger Ticketing Processing
- Improved Inter-Terminal Passenger Transportation

**Sustainability Improvements**
- Reduced Energy Costs
- Solar Energy
- Wind Energy
- Geothermal Energy
Benefits of Measuring Airline Operating and Delay Costs

• Better comparison of “true” airport costs and airport efficiency for:
  • Airport Management and Board Members
  • Rating agencies
  • Airline decision-making
  • Other Stakeholders

• Emphasizes importance of improving efficiency and performance measures, in addition to capital and O&M costs

• Provides a consistent measurement & methodology industry-wide

• Provides justification of proposed capital projects – particularly those that improve airline operating costs / delays

• Aligns airport interests of conveniently serving its passengers with airline interests of operating more efficiently and lowering costs