UPS Airlines

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Air Cargo Operations and the Economy

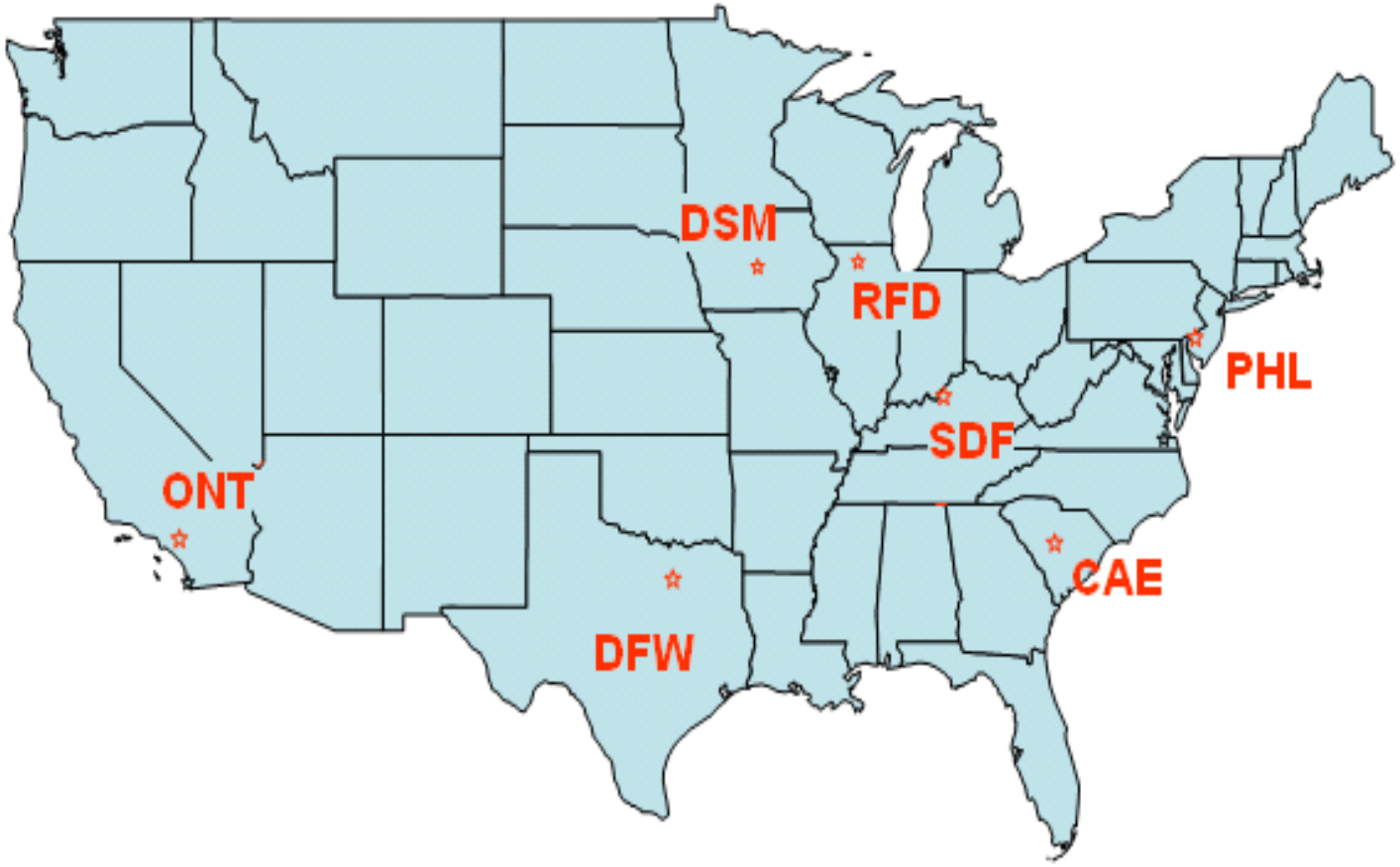
- **Global Air Cargo increased 20.6% in 2010; North America 21.8%.**
- **The value of U.S. exports transported by air reached an all-time high of $393B in 2010, accounting for 31% of total U.S. export value.**
- **By 2014, the largest international Air Cargo markets will be the USA, Hong Kong, Germany, and Japan.**
- **International volume is expected to grow 8.2% compounded annually until 2014.**

Source: IATA

UPS Impact to the Economy

- **400,600 employees world-wide**
- **UPS moves 6% of the US National GDP**
- **Every 40 additional packages creates a job**

UPS Domestic Air Hub Operations



International Air Hub Operations
Late from Domestic Hub = Intl Delays

Weather Delay Impact to Air Cargo Customer Service

- **Every minute delay into an Air Cargo Hub causes the sort to run that amount late, and thus causing the outbound launch to run late.**
- **A Diversion causes service failures for the packages on board.**
- **Any additional block time added to a flight causes later deliveries on the road.**
- **A shorter taxi-in or taxi-out can be the difference in making an Early AM (8:30AM), Next Day (10:30AM), or International Express (Intl Next Day) service commitment.**

Weather Delay Impact to Cargo Customer Service

- **Weather impacts all aspects of the Air Cargo Operation.**
  - UPS Meteorology Department is focused on the operation and time critical nature of service commitments.
- **Service recovery is critical to the success of our operation.**
- **Canceling flights is not an option.**
  - Our service commitments are guaranteed. If we do not meet the service commitment the delivery is free.
- **Satisfied customers = Growth in Business = Employment = Efficient Competitive Economy**

How Taxi Time Effects Cost

- **Every Additional Minute to Taxi Time Equates to:**

A/C Type	Gal/Min	Avg. Origin Fuel	$ Cost per Min
B757	6.4	$3.05	$19.52
B767	7.2	$3.03	$21.82
A300	9	$3.05	$27.45
MD11	16.4	$3.01	$49.36
B747-4	21.3	$2.88	$61.34

Average Per Minute Taxi Cost UPS Fleet = $35.90
117 SDF Flights X $35.90 = $4200.03/Minute
$4200.03 X 4 Nights Full Launch = $16,800.12
$16,800.12 X 52 Weeks = $873,606.24/Year

How Flight Time Effects Cost

- **Every Additional Minute to Flight Time Equates to:**

A/C Type	Gal/Min	Avg. Origin Fuel $	Cost per Min
B757	18	$3.05	$54.90
B767	26	$3.03	$78.78
A300	29	$3.05	$88.45
MD11	40	$3.01	$120.40
B747-4	48	$2.88	$138.24

Average Per Minute Cost UPS Fleet = $96.15
117 Flights X $96.15 = $11,249.55/Minute
$11,249.55 X 4 Nights Full Launch = $44,998.20
$44,998.20 X 52 Weeks = $2,339,906.40/Year

How Arrival Delays at SDF Hub Affect Costs

- **Cost Per Minute Late Arrival into SDF Hub = $711.96**

  (Cost is for Hub Workers Only does not include Power Consumption, Support Staff, Downstream Impact)

$711.96 Per Minute Late Per Flight

1 Flight 15 Minutes Late = $10,679.40

Summary: Costs Per Minute for Weather Delays

- For Every Taxi Minute = $35.90
- For Every Minute Enroute = $96.15
- For Every Minute Into SDF Hub = $711.96

Quantify Costs/Benefits of Weather Forecast Decisions

- Relatively easy to quantify number of minutes late due to weather
- Hard part is quantifying AVOIDABLE weather delays
- With new forecast tools, takes time to gain confidence in tool and then to make effective operational changes.
- Costs of Doing Nothing vs. Taking Action

Decision Threshold Determined by Costs/Benefits

Example 1: Deicing SDF Departure fleet for Frost

- Costs $50,000 to pretreat entire fleet
- Getting caught by surprise Costs 100 departures 15 minutes delay each. Down line costs $1 Million +
- Breakeven Cost/Benefits Ratio 20:1 or 5%
- Operational Decisions made at only 10% Risk of Frost

Decision Threshold Determined by Costs/Benefits

Example 2: Spreading out Hub Arrivals due to Severe Adverse Weather during Arrivals (T-storms/Winter Storm)

- Direct Costs $1 Million
- Potentially Avoids $2 Million Costs and/or 100,000 Service Failures (10% of Volume)
- Successful Forecast must be accurate within 30 minutes 6-10 hours in advance, at 65%+ Confidence Level

Avoidable Weather Delays

- Large, Complex Networks must be flexible.
- Forecast must meet the needs of the users/decisionmakers.
- Users/decisonmakers must have confidence in the forecasts. 2 or 3 consecutive busts will stifle proactive weather decisions.
- Large, Complex Networks constantly change.

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