

A decorative graphic on the left side of the slide shows a portion of a globe with latitude and longitude lines. A white airplane is depicted in flight, leaving a white contrail that extends from the top left towards the center of the globe.

Airport Capacity Benchmarks
Trends and Issues in Airport Utilization

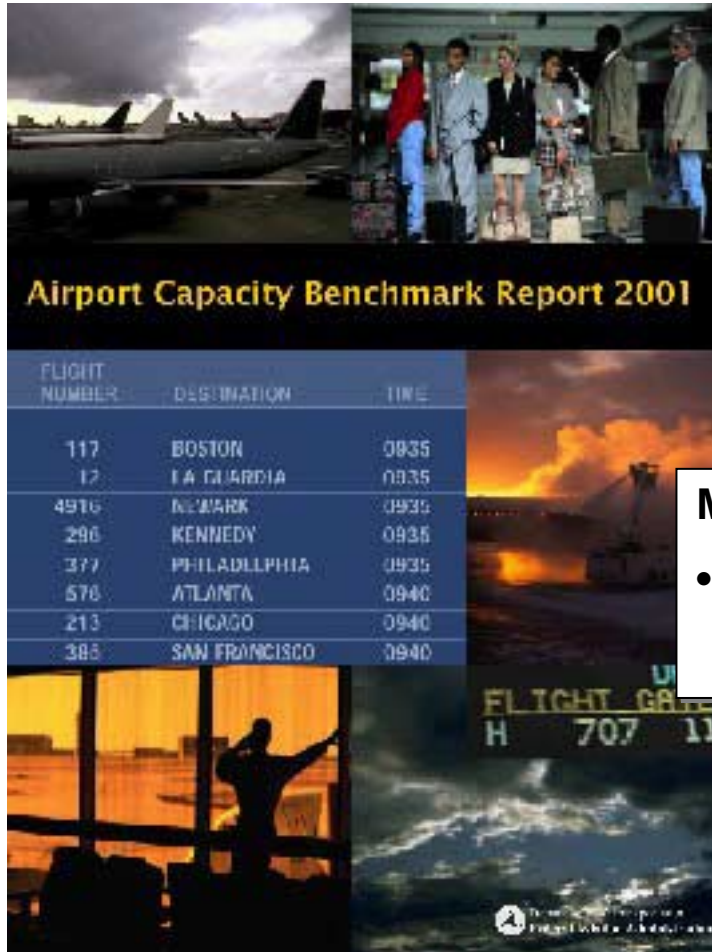
William J. Swedish
Thomas P. Berry, Jr.
18 March 2003

Presentation to the
Annual Energy Outlook 2003 Conference

Objectives of Benchmarks

- *“We need a set of capacity benchmarks to understand the impact of airline scheduling and what relief can realistically be provided by the ATC modernization effort, new controller procedures and new ground infrastructure in the near and longer term.”*
 - **Kenneth Mead, DOT Inspector General**
 - **Hearing of the Senate Commerce, Science and Transportation Committee, 14 September 2000**

Capacity Benchmark Report



Executive Summary

Setting the Framework for Benchmarks

The benchmarks in this report are a relatively simple expression of a complex quantity, airport capacity. They serve primarily as a reference point on the state of the airport system at a specific time. They can be updated in the future to mark progress. They can also be used to identify and compare specific types of airports, for instance to determine which airports are most severely affected by adverse weather or to compare the prospects for airports that plan to build new runways to those that do not. The benchmarks also provide a starting point for public policy discussions, because they give a succinct report on the current and future state of major airport capacity.

Benchmarks are useful data that help frame discussions. However, they are not a substitute for the more detailed analysis that should precede major investment and policy decisions. In this sense they might be compared to a vital sign of human health, such as blood pressure. That simple indicator might be the starting point for a diagnosis, but more information would be wanted before recommending surgery. Similarly, capacity benchmarks help identify problem areas but are not, in themselves, an adequate basis for selecting remedies.

This issue is apparent in the case of Atlanta Hartsfield International Airport. The scheduled operations exceed the benchmarks several times daily in optimum weather and frequently under reduced rate conditions. The simple comparison of schedule to benchmarks suggests that some action is needed to curtail the schedule. However, air traffic controllers, airlines, and the airport operator have indicated in discussions that they are relatively comfortable with the current schedule and believe that it makes efficient use of the airport. Their judgment is based on vast experience and a broad understanding of air transportation. Some of the considerations are specific to Atlanta (favorable runway configuration, weather patterns, and airspace structure). Some are applicable to transfer hub airports in general (the

Methodology

- Between October 2000 and April 2001, the FAA and MITRE/CAASD developed capacity benchmarks for 31 airports.

conditions, runway configurations, and the mix of aircraft types. Capacity benchmarks assume there are no constraints in the en route system or the airport terminal area. They are useful for broad policy discussions and the development of long-term strategies.

Methodology

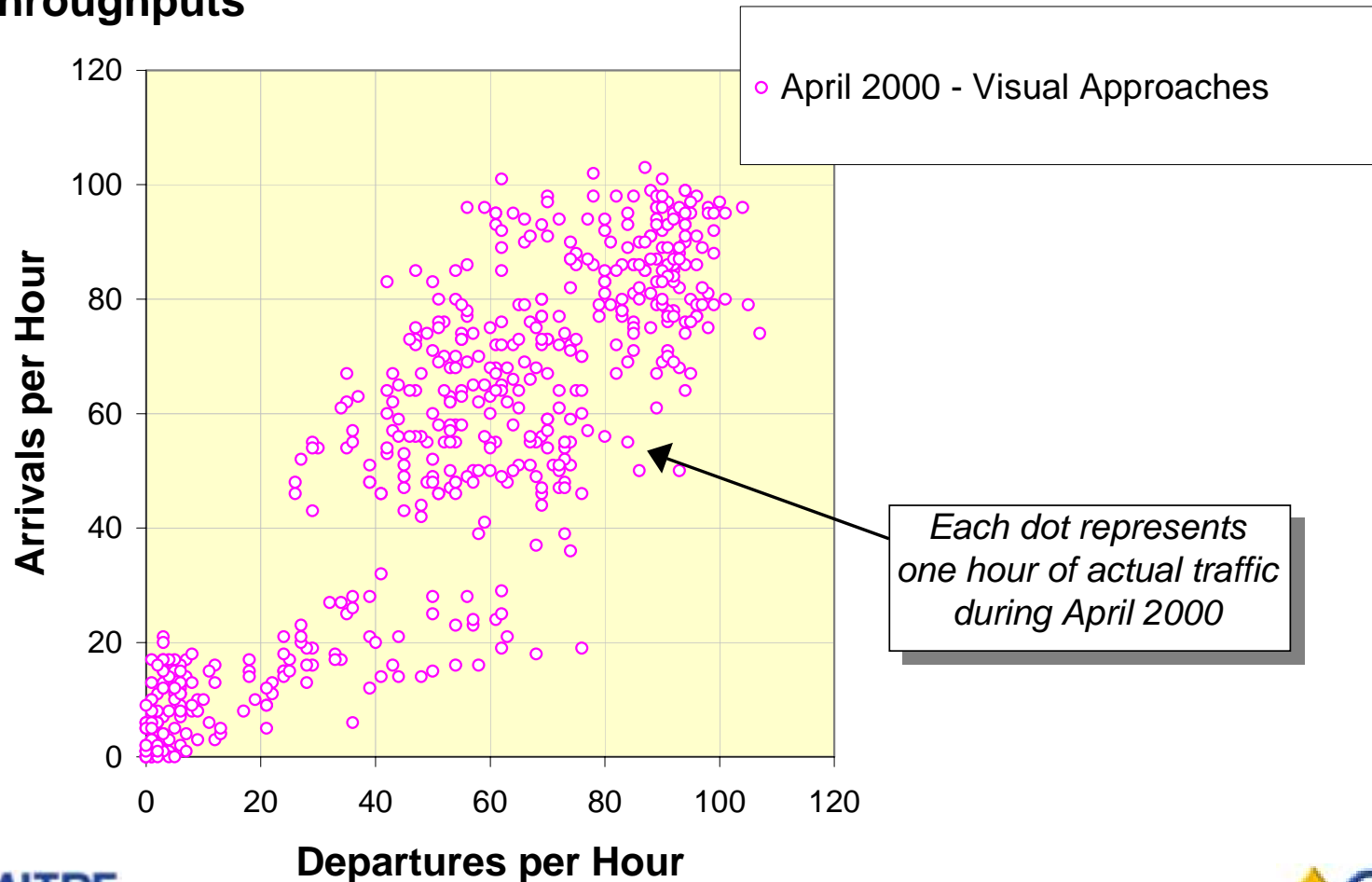
- Between October 2000 and April 2001, the FAA and MITRE/CAASD developed capacity benchmarks for 31 airports.
- There are two rates for each airport – an optimum rate based on good weather conditions and a reduced rate based on adverse weather conditions, which may include poor visibility, unfavorable winds, or heavy precipitation.

Description of Benchmarks

- **Benchmarks are a starting point for public policy discussions**
- **Benchmarks are a *sustainable* level of operations for the given conditions**
 - Can be exceeded occasionally
 - Lower rates can be expected if conditions are worse
- **Two Benchmark rates per airport**
 - Optimum Rate – best weather and runway configuration
 - Reduced Rate – most commonly used configuration in adverse weather
- **Capacity benchmarks combined actual data and computer models**

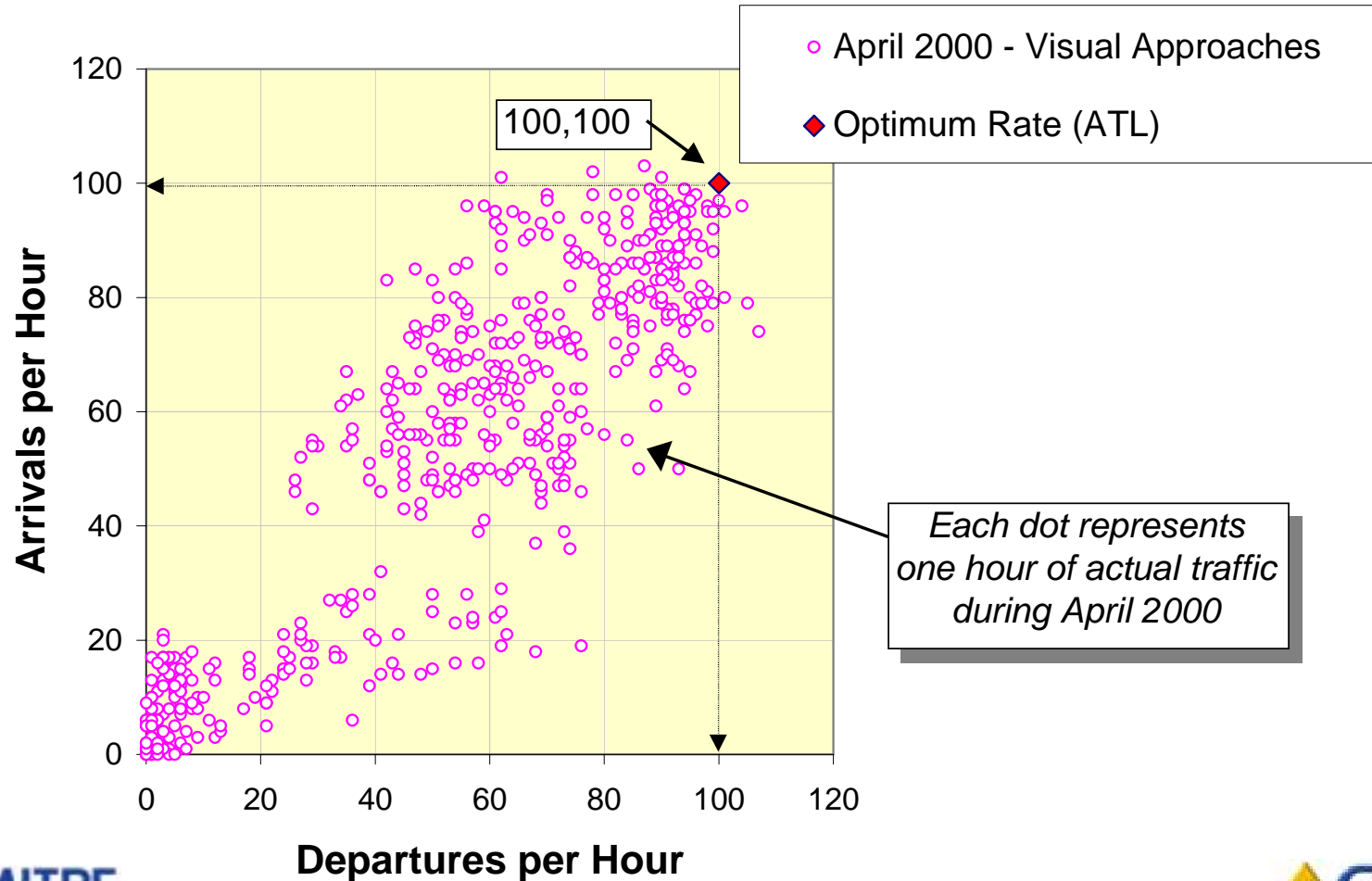
Example of Methodology – Atlanta (ATL)

Step 1. Use operational counts (FAA data) to determine actual hourly throughputs



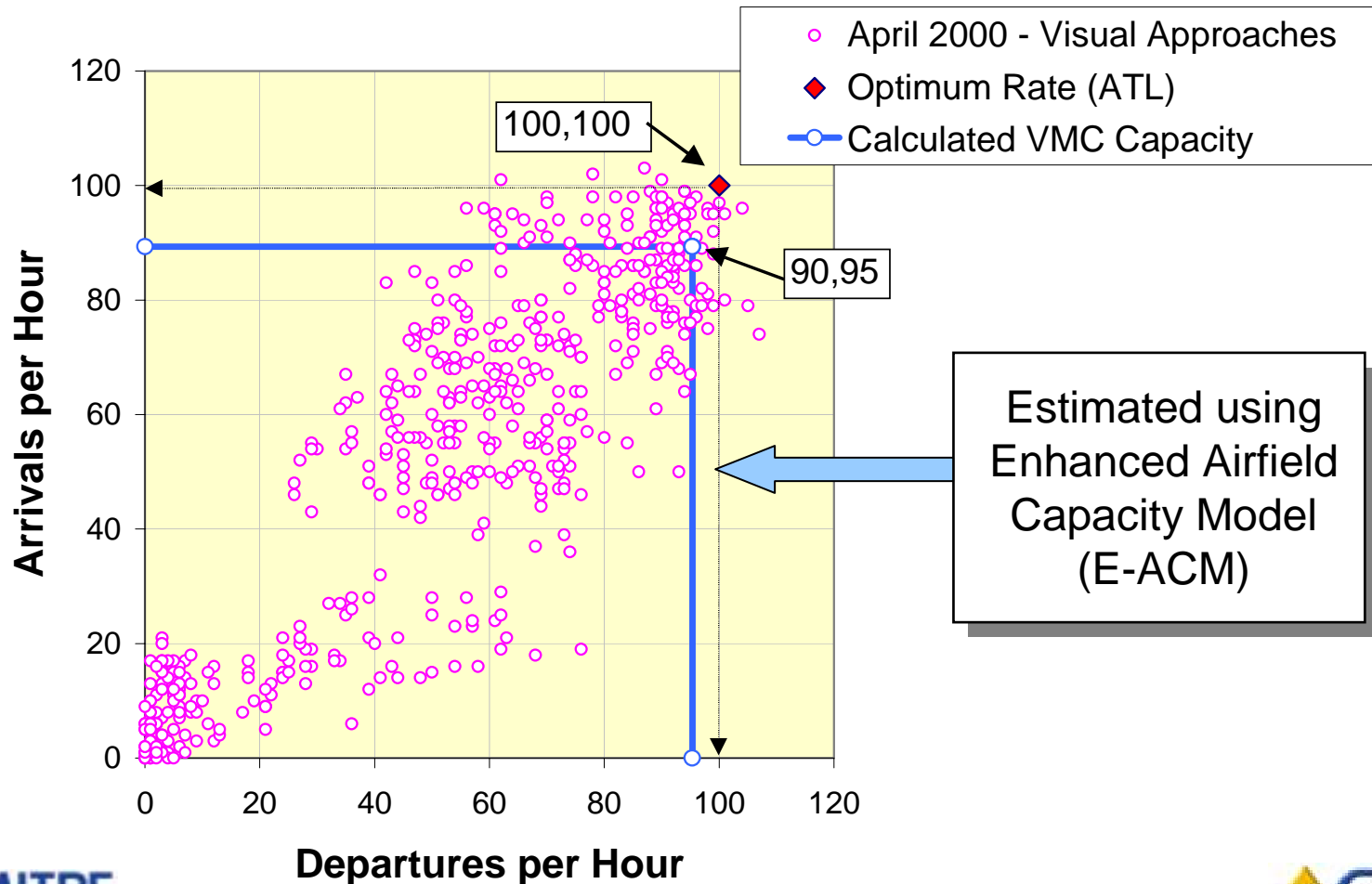
Example of Methodology – Atlanta (ATL)

Step 2. Compare to rates reported by facility



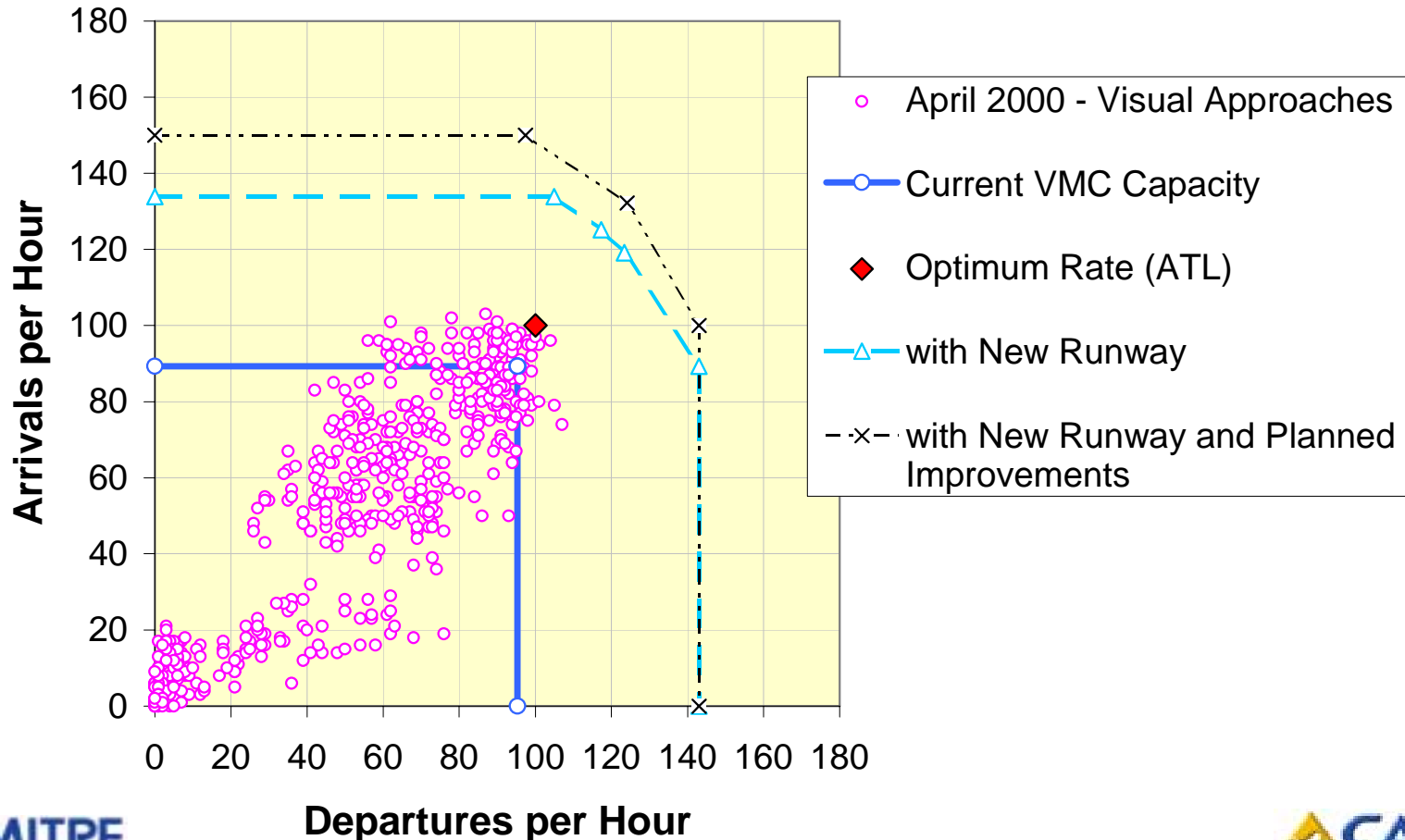
Example of Methodology – Atlanta (ATL)

Step 3. Calculate capacity for the reported operations

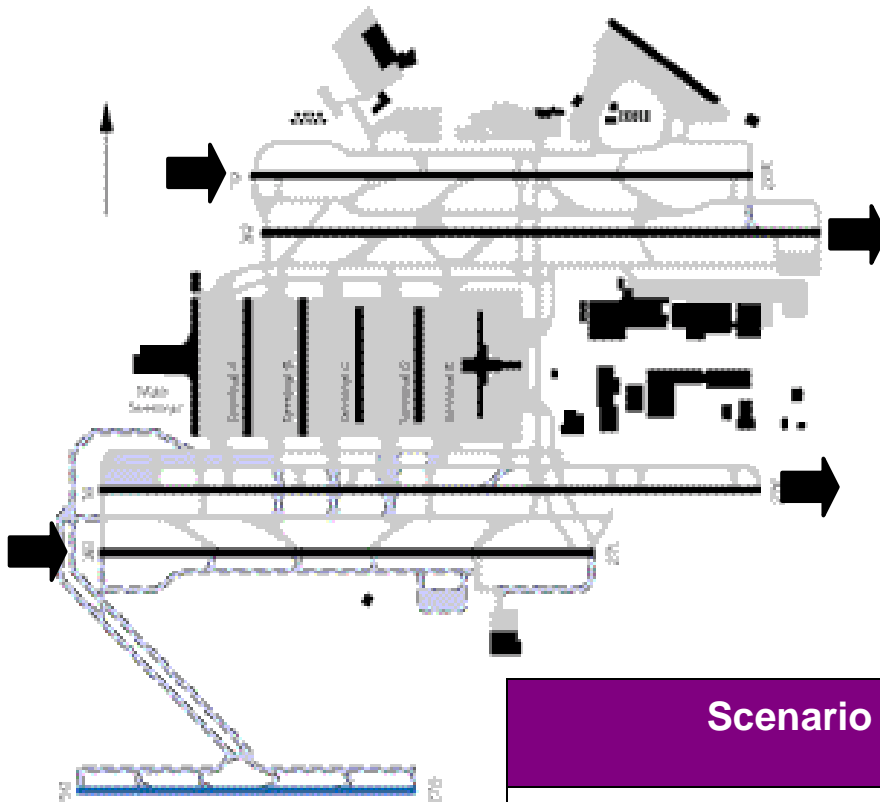


Example of Methodology – Atlanta (ATL)

Step 4. Use calibrated model to develop future capacities for new runways, procedures, technology



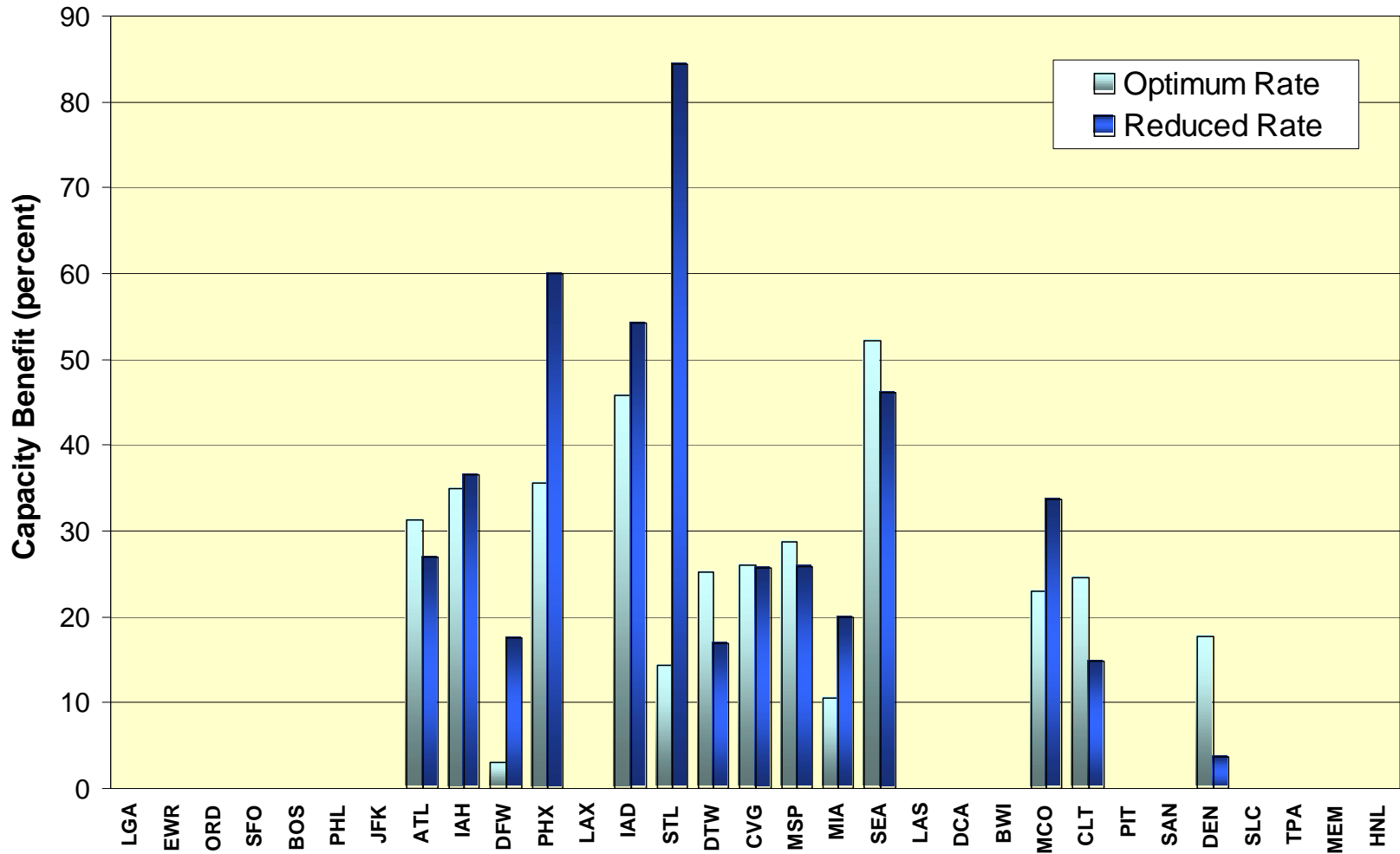
ATL Benchmark Summary



- **New runways and other improvements will increase capacity**

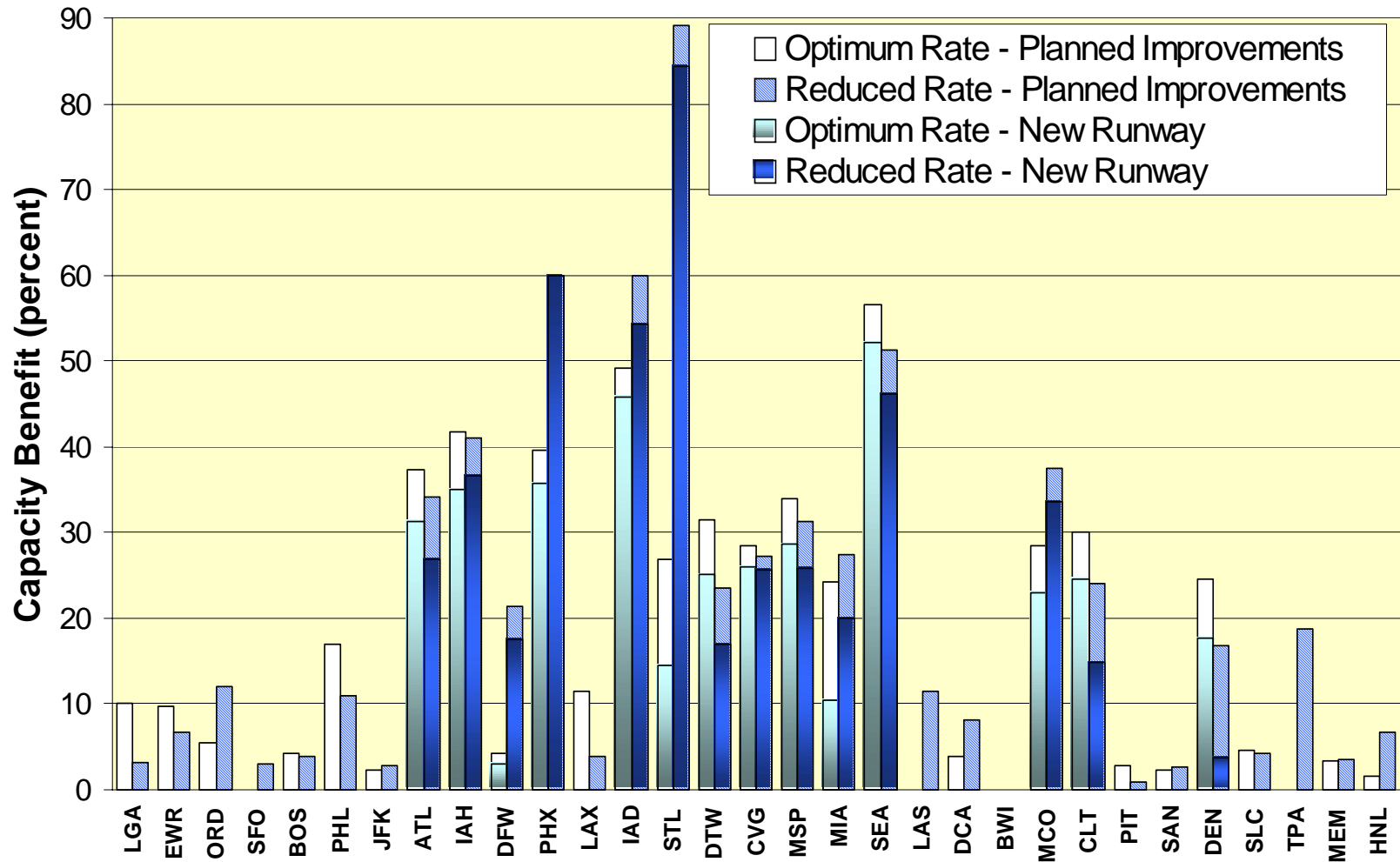
Scenario	Optimum Rate	Reduced Rate
Today	185-200	167-174
New Runway	243-258	212-219
Plus planned improvements	254-269	224-231

Benefit of a New Runway Depends on Current Configuration, Use of New Runway



Airports ordered by average delay (CY2000)

Technology and Procedural Improvements Provide Benefit of 0–17 Percent



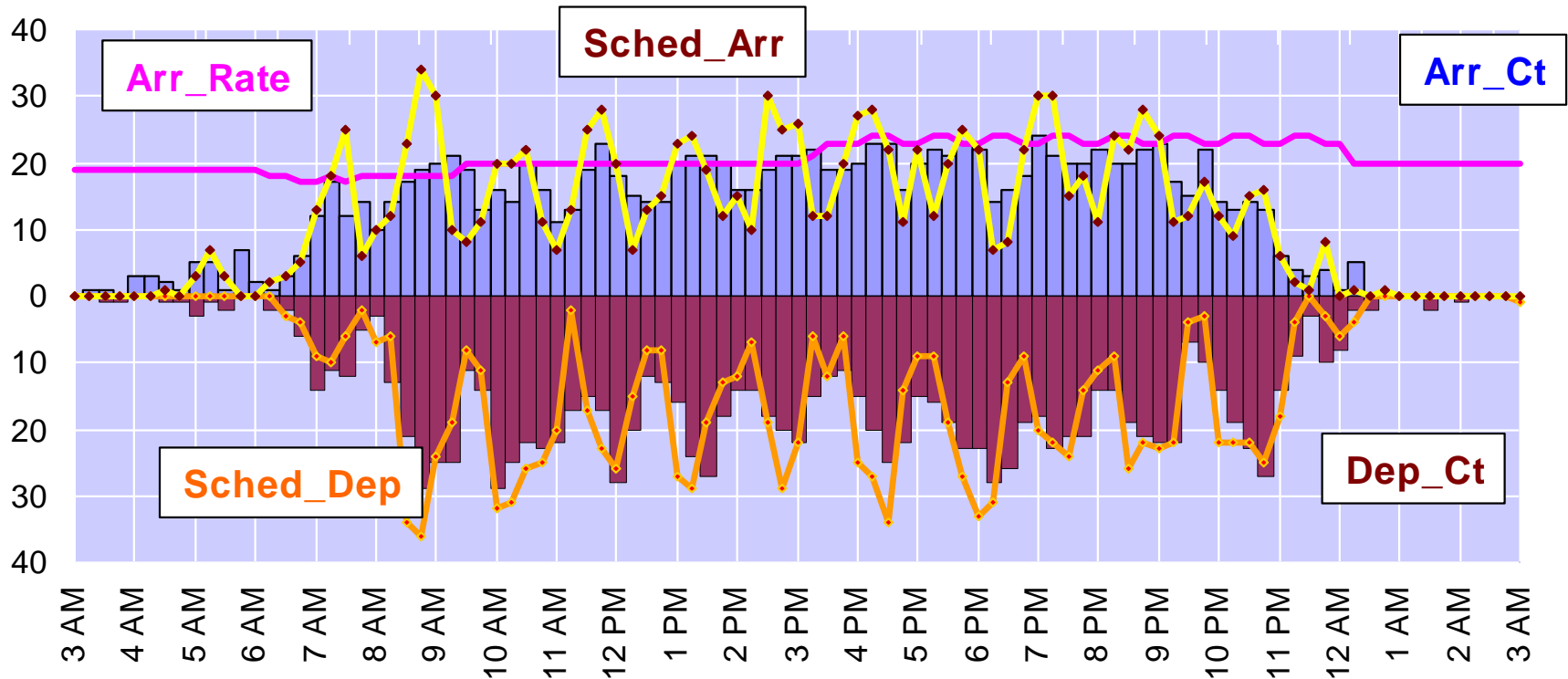
Airports ordered by average delay (CY2000)

ATL: Friday, Feb 28, 2003

<u>Delays</u>	<u>Departure</u>	<u>Arrival</u>	<u>TMS</u>
18	0	15	3

% Ops delayed = 1%

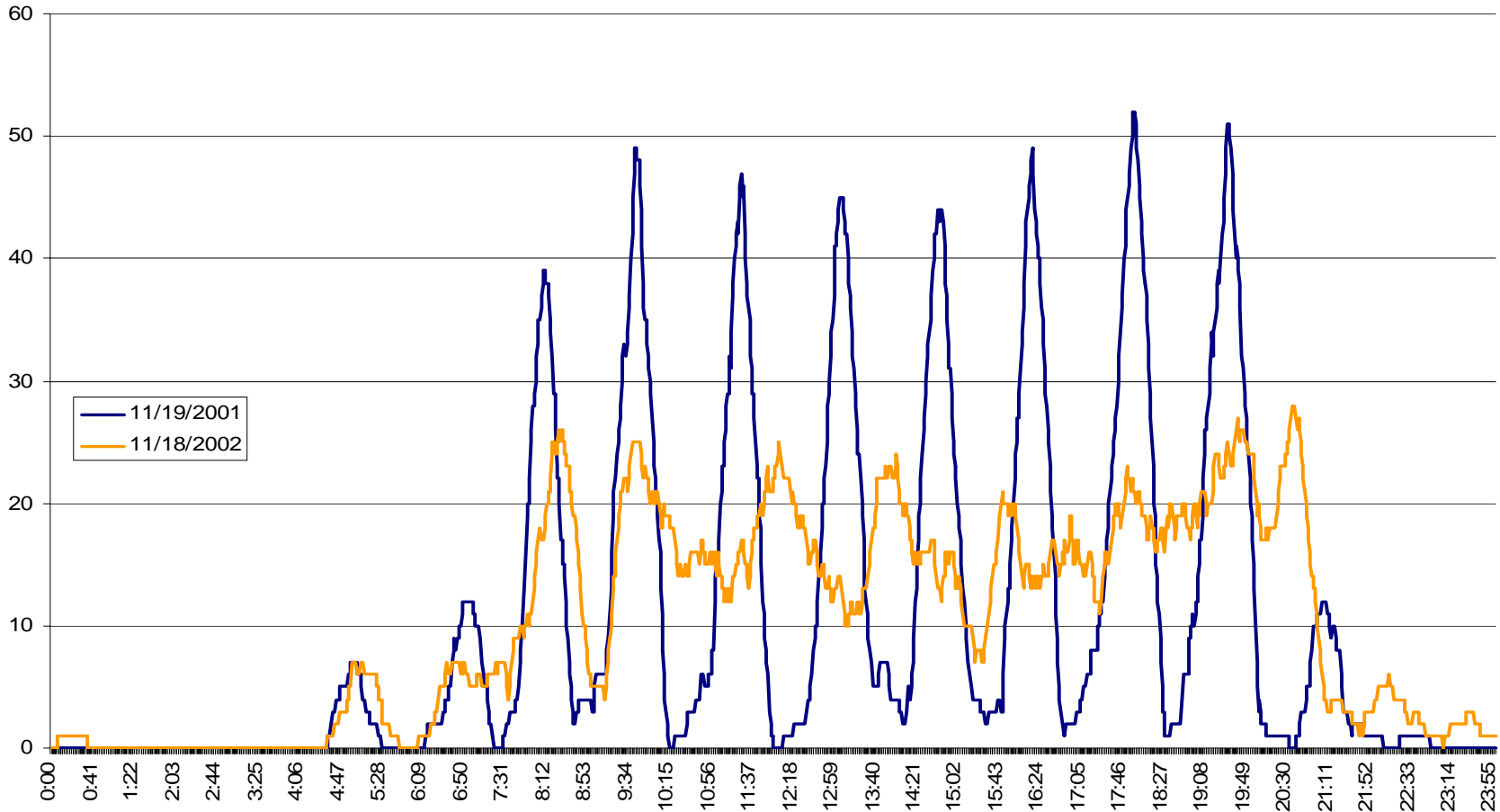
Average delay = 22 minutes



- **Actual operations are limited by airport capacity**

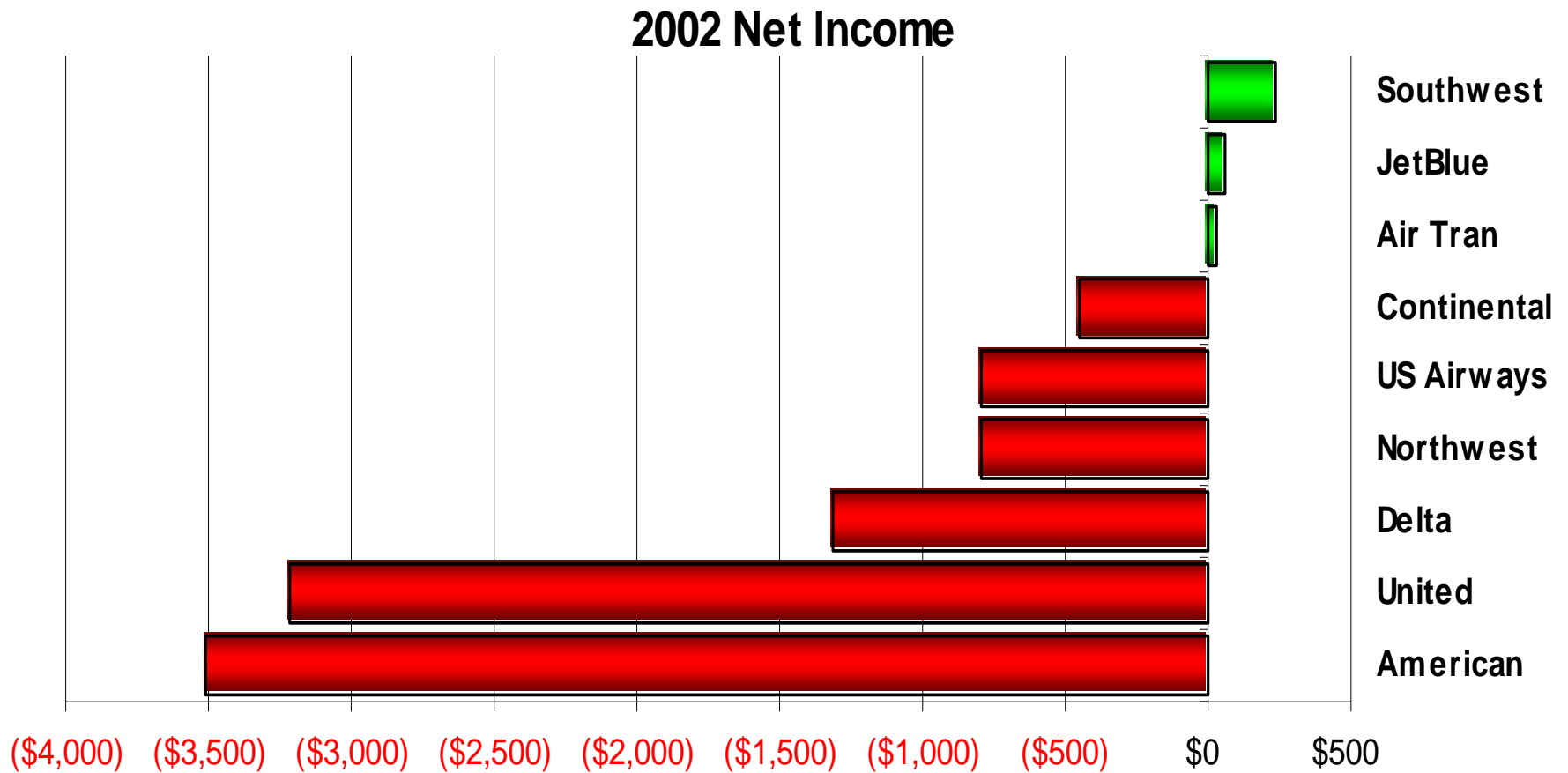
Airlines are Adjusting Schedules in Response *American's DFW Rolling Hub*

AA DFW OAG Scheduled Arrivals

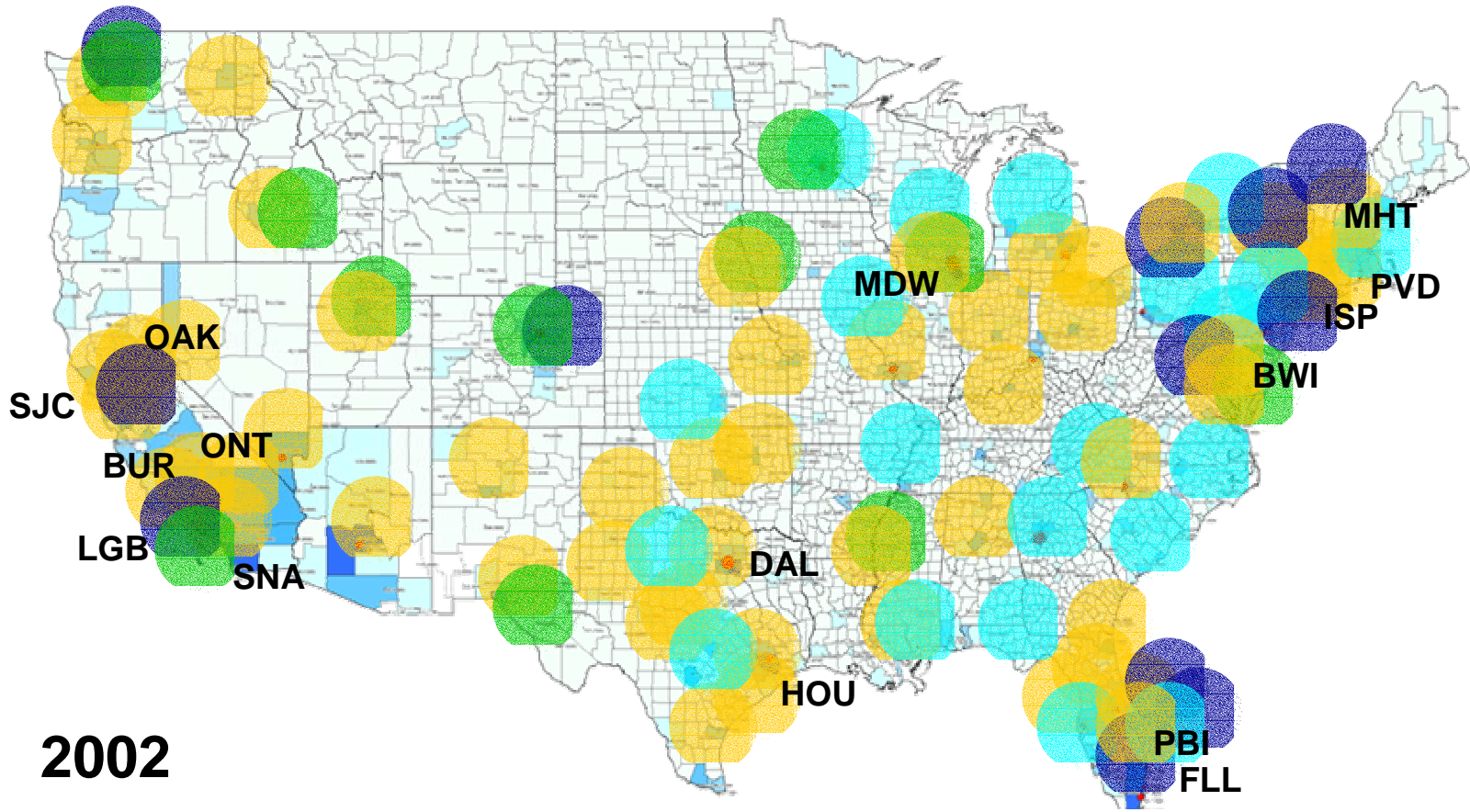


Changes in Demand

Network carriers have lost a record \$15 billion in the past 24 months, while the low cost carriers remained profitable



Low Cost Carriers Frequently Use Secondary Airports in Major Markets



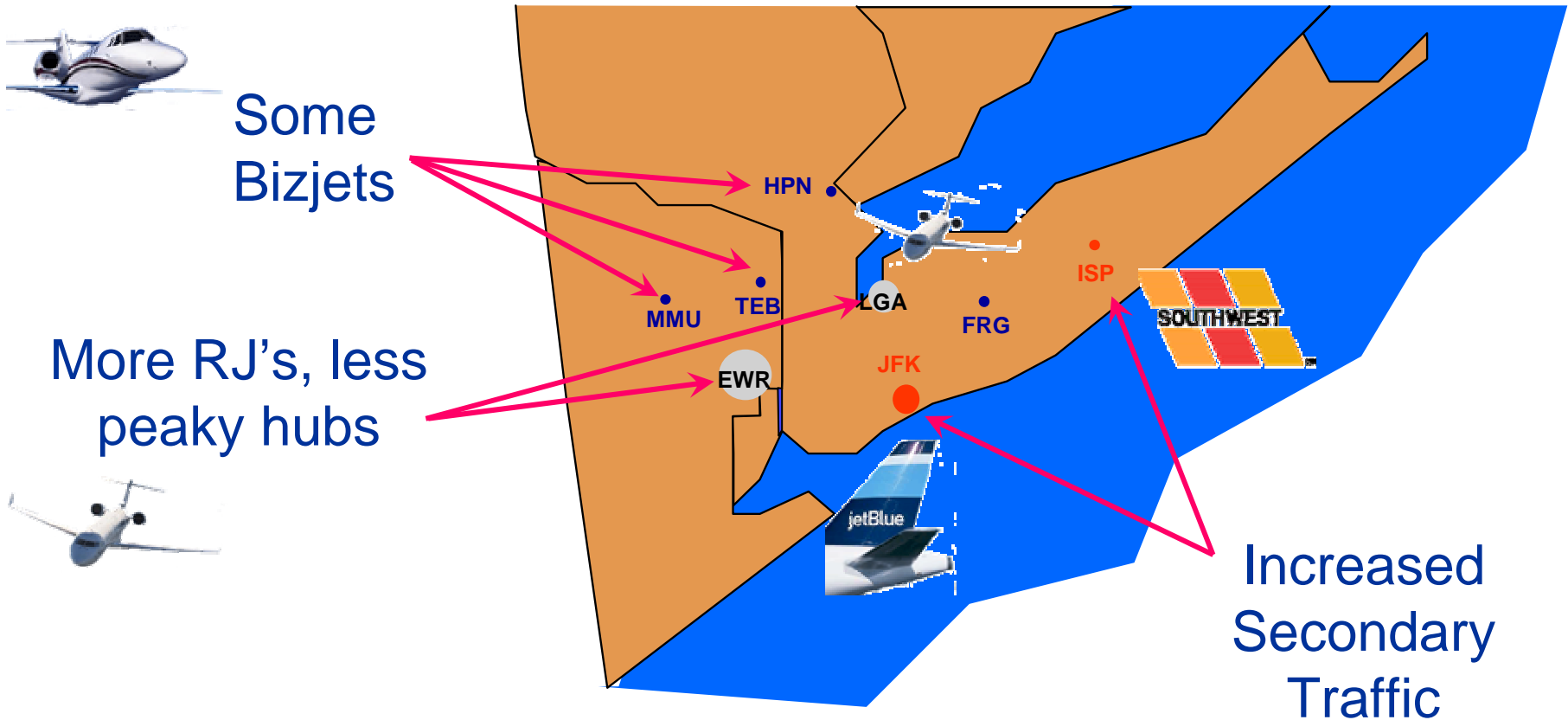
2002



MITRE

CAASD

Metropolitan Areas Continue to Grow



Some Bizjets

More RJ's, less peaky hubs

Increased Secondary Traffic

Expect Traffic to Change in the Following Ways

- More flights by **low cost carriers** as they leverage their cost advantages
- More flights by **regional jets** operated by regional airlines as network carrier transfer routes
- Some **business jets and fractional** or on-demand traffic increases

A more diverse set of users with more evenly distributed influence

Volume Will Return but with Changes in its Distribution

- **Airports**
 - **Major airports** may reach capacity limits
 - Even though planned improvements will increase capacity
 - New runways, where possible, provide largest increase
 - **Secondary airport** growth in major metropolitan areas
 - **Fewer hubs** as airlines restructure
 - Rolling, **less peaky hubs** will become standard practice