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ALTERNATIVE STRATEGIES FOR ACCOMMODATING THE BAY AREA'S FUTURE AVIATION DEMAND

Demand Management Scenario

Prepared for:

Regional Airport Planning Committee

ABAG
Association of Bay Area Governments

METROPOLITAN TRANSPORTATION COMMISSION

Bay Conservation Development Commission

DRAFT

November 20, 2009

Passion. **Expertise. Results.**

Critical Study Questions

- **What Are the Capacity Limits of the Primary Bay Area Airports?**
- **When Are These Limits Likely to Be Reached?**
- **What Strategies Offer the Greatest Potential to Allow the Region to Efficiently Accommodate Future Aviation Demand?**
  - Redistribution of Traffic Between the Primary Airports
  - Secondary Airports (Out-of-Region)
  - **Demand Management**
  - New ATC Technologies
  - High Speed Rail
  - GA Reliever Airports

There is Growing Recognition that Demand Management Mechanisms Must be Available to Airports to Meet Future System Demand

Potential Demand Management Mechanisms

- **Slot Controls** *(DCA/LGA)*
- **FAA Negotiated Caps** *(ORD/JFK/EWR)*
- **Perimeter Rules** *(LGA/DCA/Love Field)*
- **Passenger Caps** *(Orange County)*
- **Direct Negotiations Between the Airport and the Airlines**
- **Limits on Available Gates** *(LAX)*
- **Minimum Aircraft Size Rules**
- **Peak Period Pricing** *(BOS)*
  - *Explicitly Permitted at Congested Airports by New U.S. DOT Rates and Charges Policy*

Focus of Analysis is Not to Define a Specific Program, but Rather to Estimate the Potential Capacity and Delay Benefits that Demand Management Could Produce

The Demand Management Scenario will be Focused on SFO, Since OAK and SJC are not Forecast to Incur Serious Delays

New U.S. DOT Policy Permits Congested Airports to Use Pricing Tools to Increase Efficiency and Reduce Delay

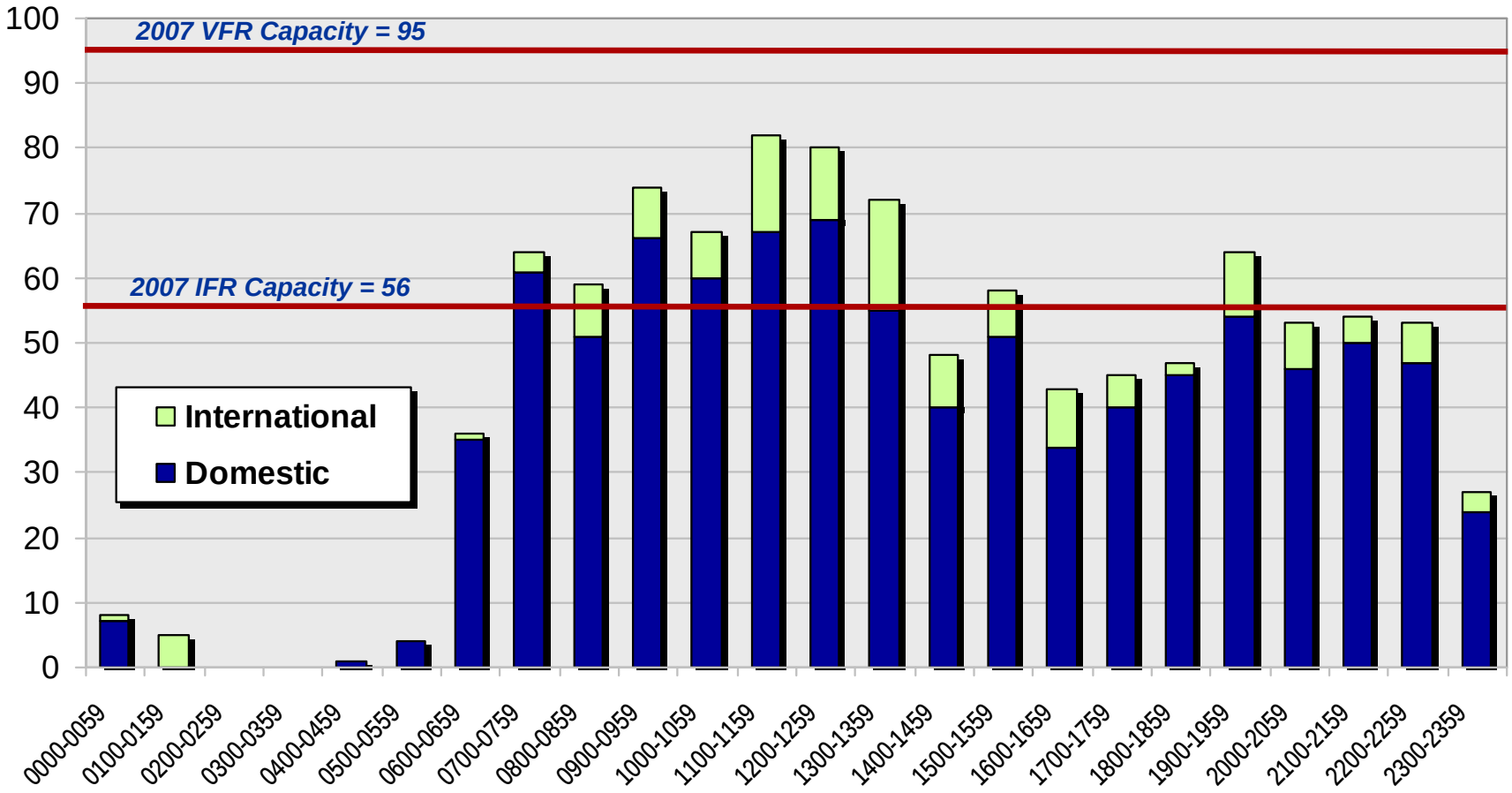
Airport Demand Management Programs Such as Peak Period Pricing Can Reduce Congestion and Delay by Creating Financial Incentives to:

- ***Spread Flight Activity More Evenly Across the Day***
- ***Increase Aircraft Size (Upgauging)***

Current Operations at SFO Peak During the Late Morning and are Well Above the Airport's IFR Capacity

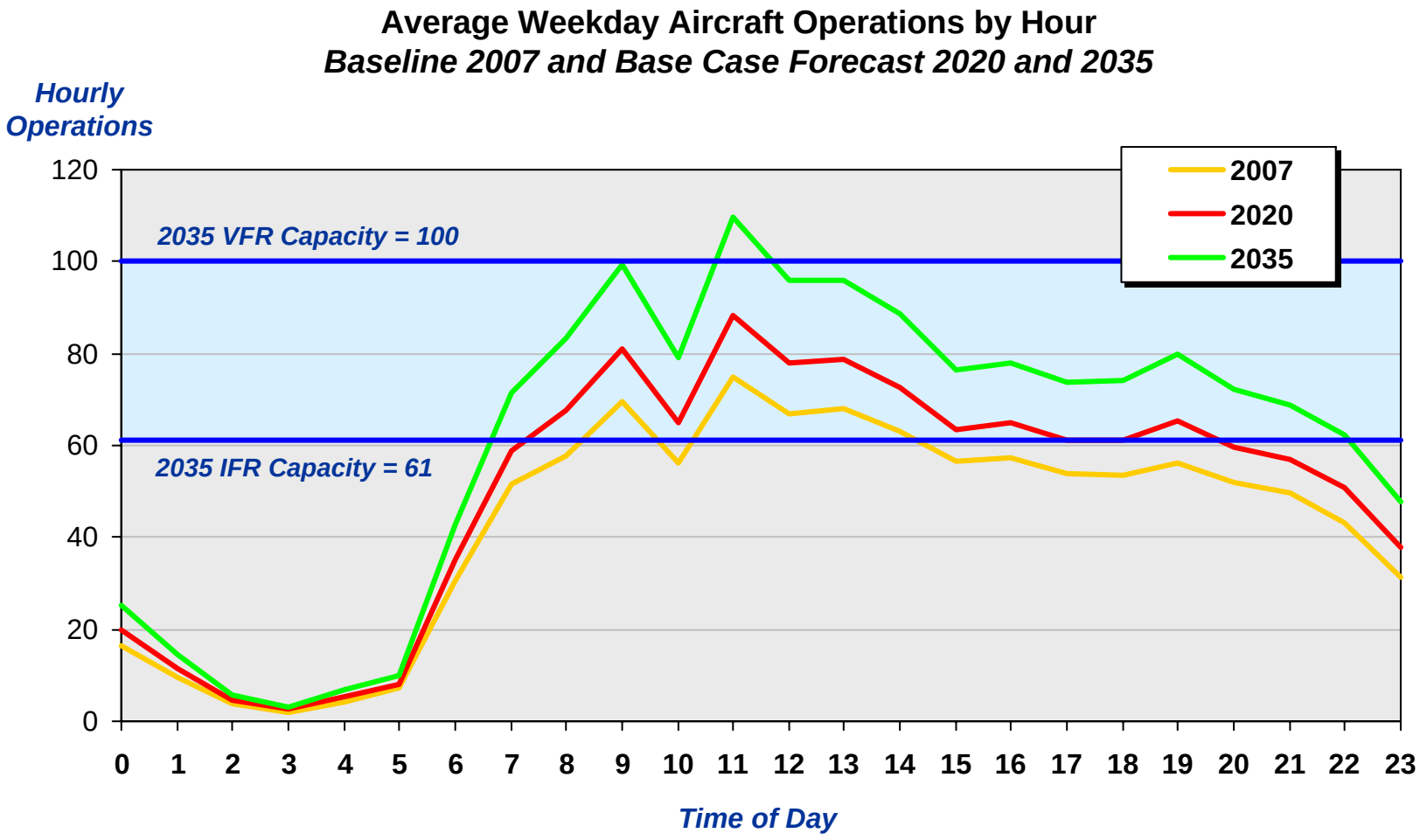
Weekday Scheduled Operations at SFO by Hour

August 2009



Source: OAG Schedules

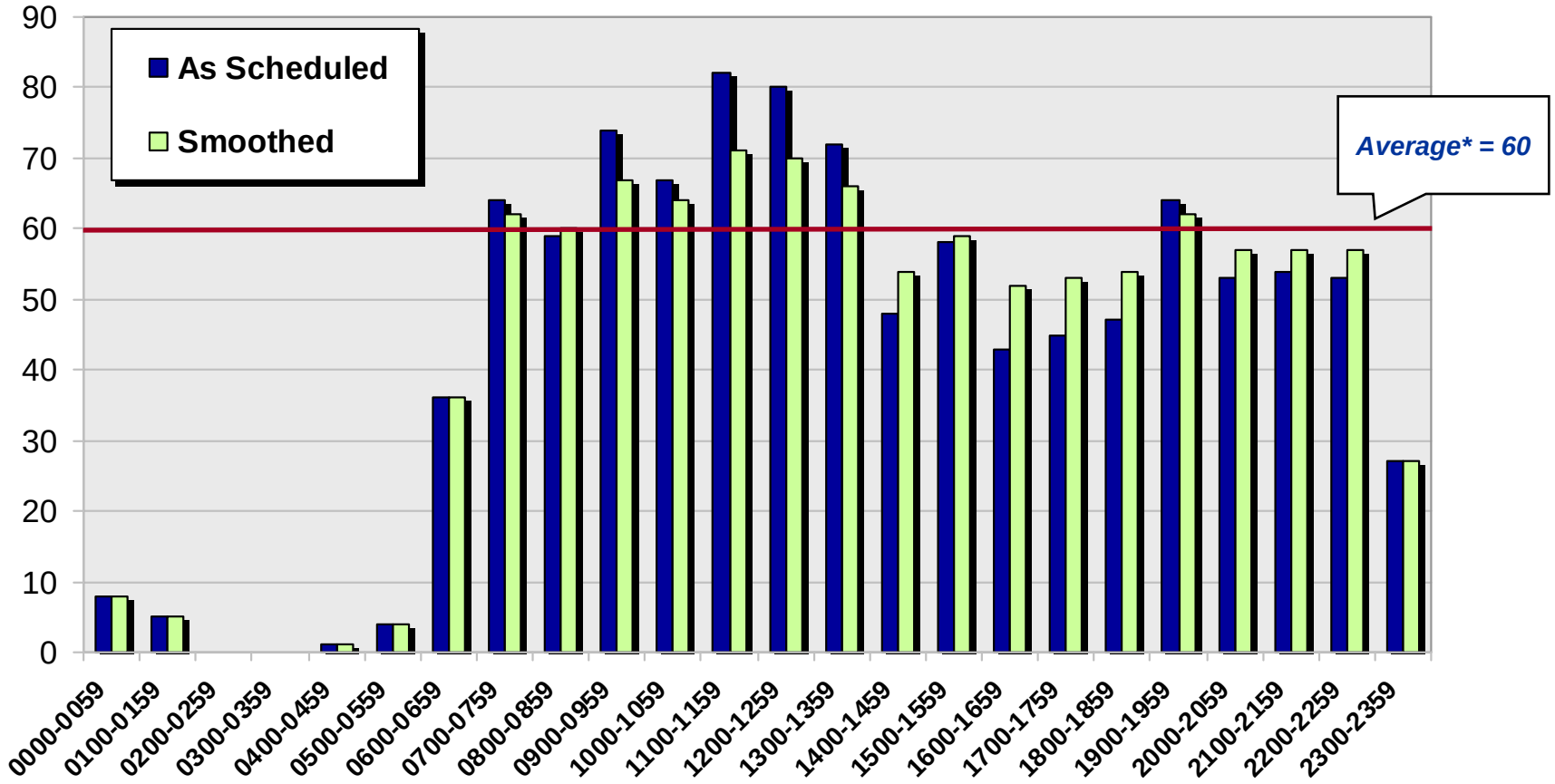
By 2035, Late Morning Demand Will Exceed SFO's Maximum VFR Capacity while IFR Capacity Will Be Exceeded Throughout the Day



Differential Pricing Between Peak and Off-Peak Periods Can Encourage Airlines to Spread Flights More Evenly Over the Day

Example of Eliminating 50% of Current SFO Peaking

Weekday Scheduled Operations at SFO by Hour (*August 2009*)



* Average hourly operations for 07:00 to 21:59
Source: OAG Schedules

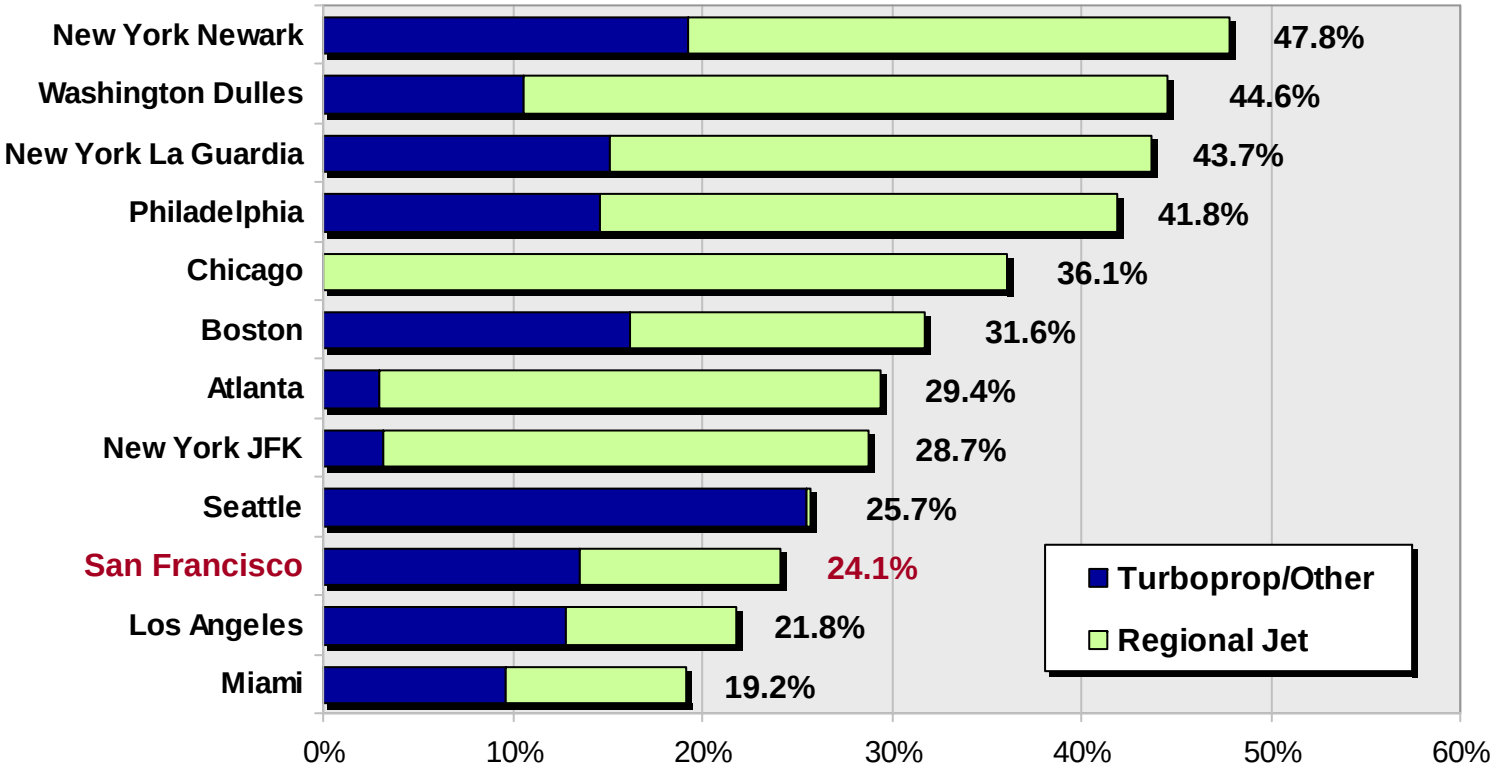
However, Airline Scheduling Considerations Can Limit the Extent of Peak Smoothing that is Feasible

- **Flights to and from Carrier Hubs Generally Timed to Meet Connecting Banks**
- **Eastbound Transcontinental Flights Typically Depart West Coast Cities Before 3:00pm**
- **Long-haul International Flights Most Often Timed to Depart and Arrive at Reasonable Hours**
- **Aircraft Must be Turned Quickly to Maintain High Utilization and Control Costs**

These Factors will Constrain Airlines' Ability to Produce Dramatic Shifts in Flight Timing

Although SFO Has a Comparatively Low Share of Domestic Flights Operated with Small Aircraft…

Share of Daily Domestic Departures Using Regional Jet, Turboprop or Other Aircraft with 50 or Fewer Seats
August 2009

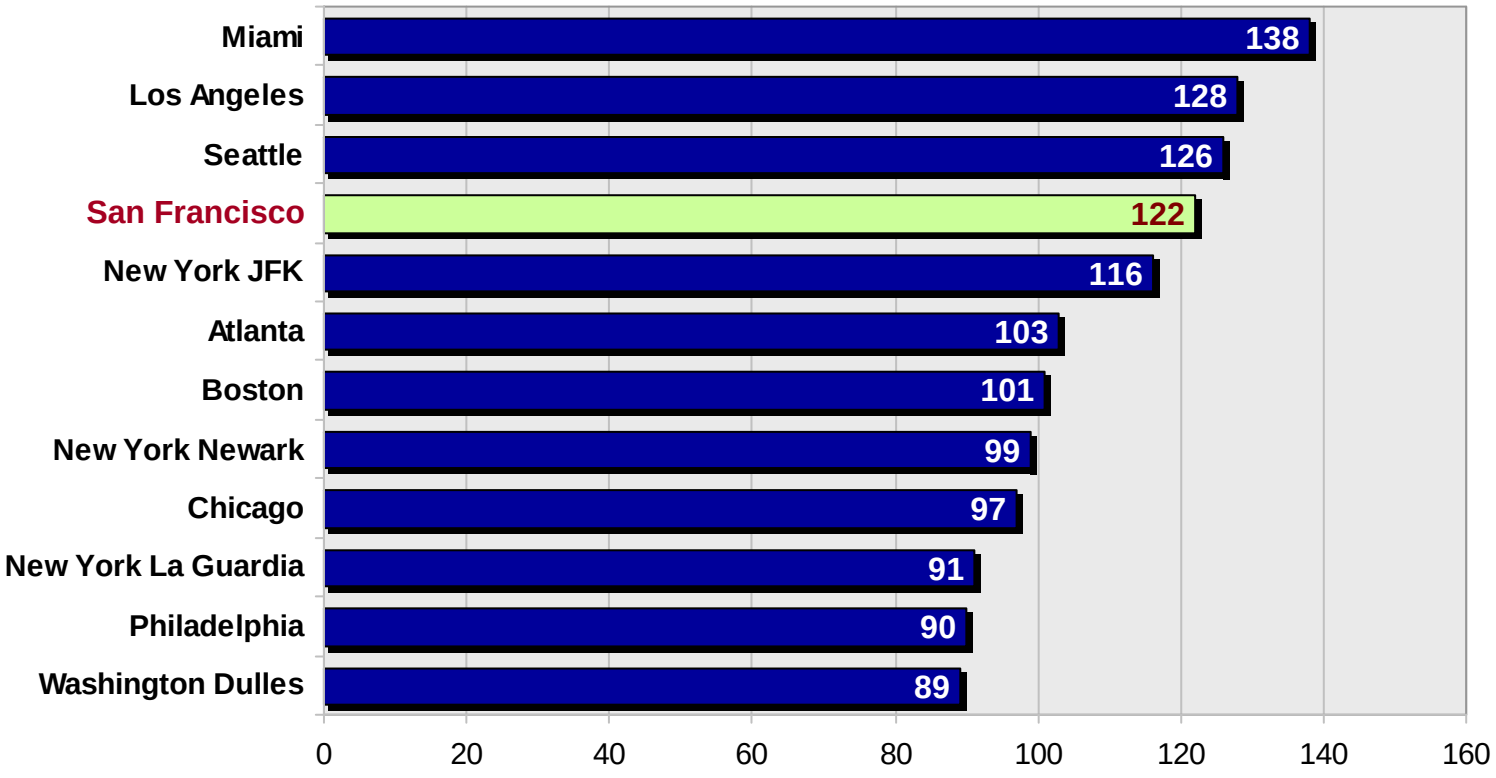


Note: Includes 10 most congested U.S. airports plus Los Angeles and Seattle

Source: OAG Schedules

…and One of the Largest Average Aircraft Sizes, SFO Would Nevertheless Benefit From Aircraft Upgauging

Average Seats Per Domestic Departure at Large and Congested Airports
August 2009



Note: Includes 10 most congested U.S. airports plus Los Angeles and Seattle

Source: OAG Schedules

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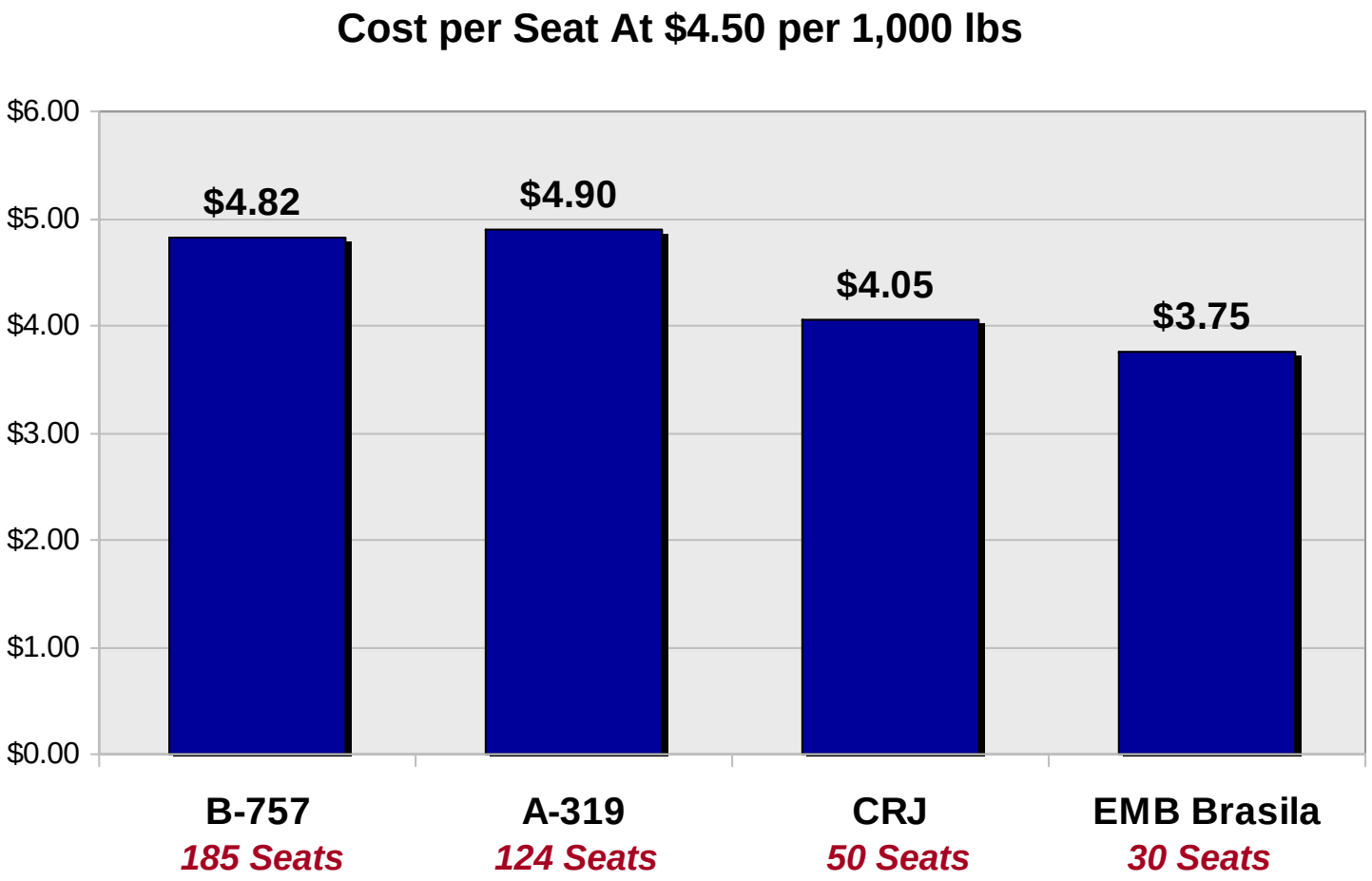
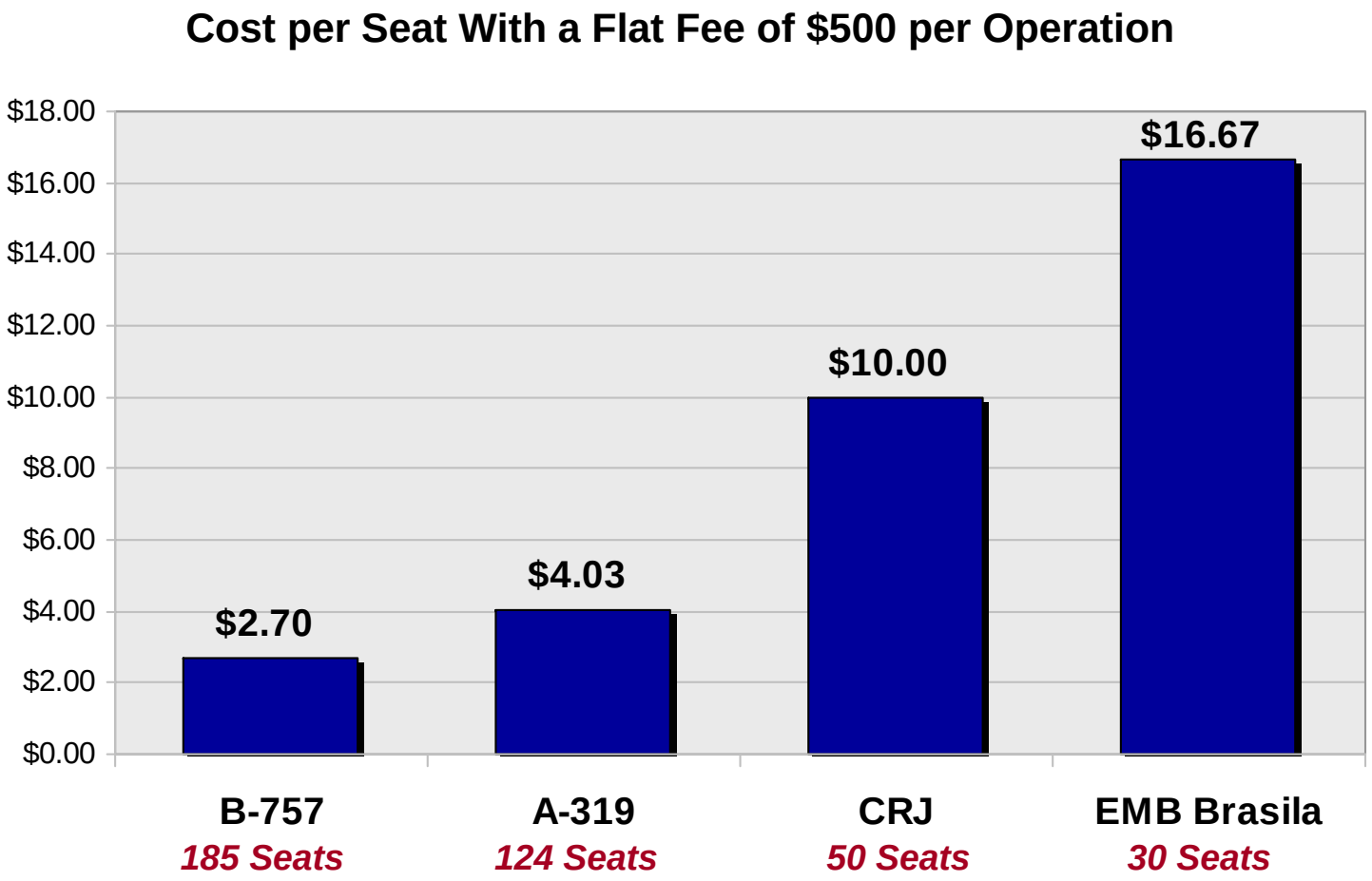
The Traditional Weight-Based Landing Fee Provides No Financial Advantage to Larger Aircraft



Source: Jane's All World's Aircraft, OAG

In Contrast, the Use of a Flat Fee During Congested Periods Creates an Economic Incentive to Use Larger Aircraft

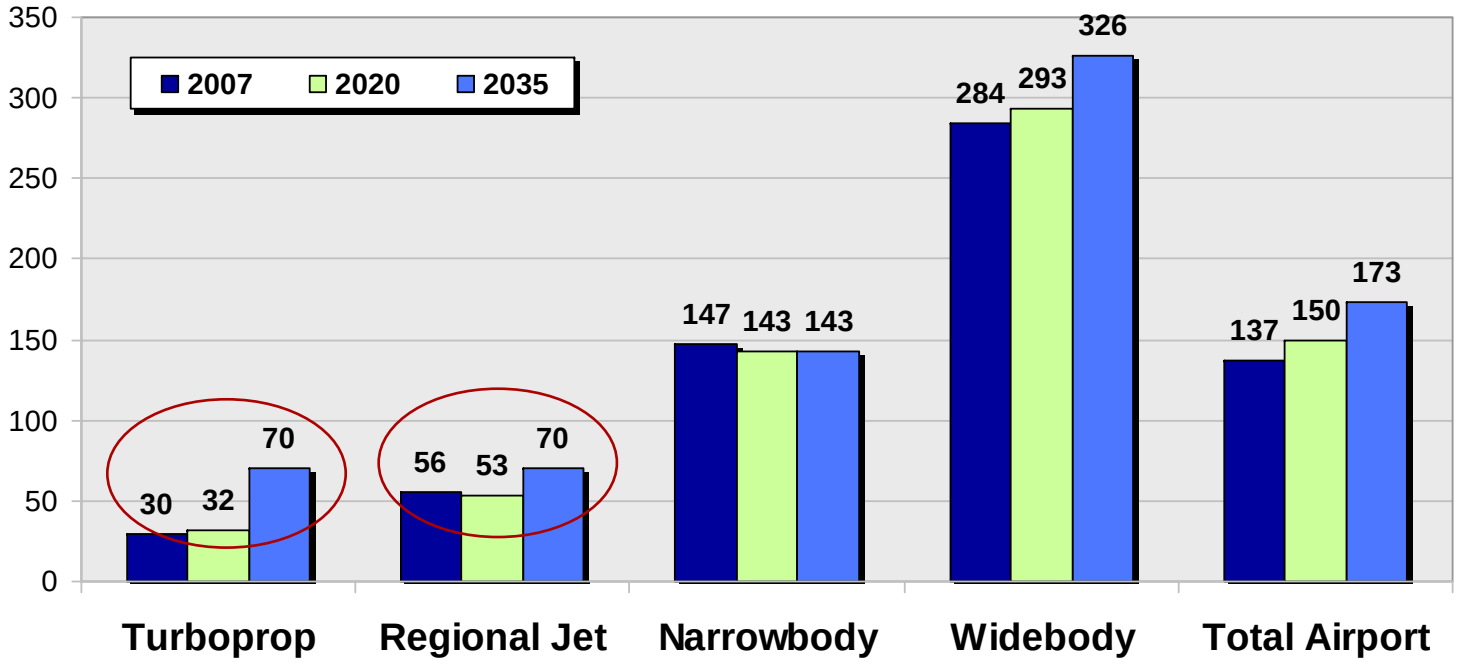


Source: Jane's All World's Aircraft, OAG

The Future Fleet Mix for SFO Already Accounts for Small Aircraft Upgauging, but Predominantly After 2020

Average Aircraft Size by Aircraft Category

Actual 2007 and Base Case Forecast 2020 and 2035

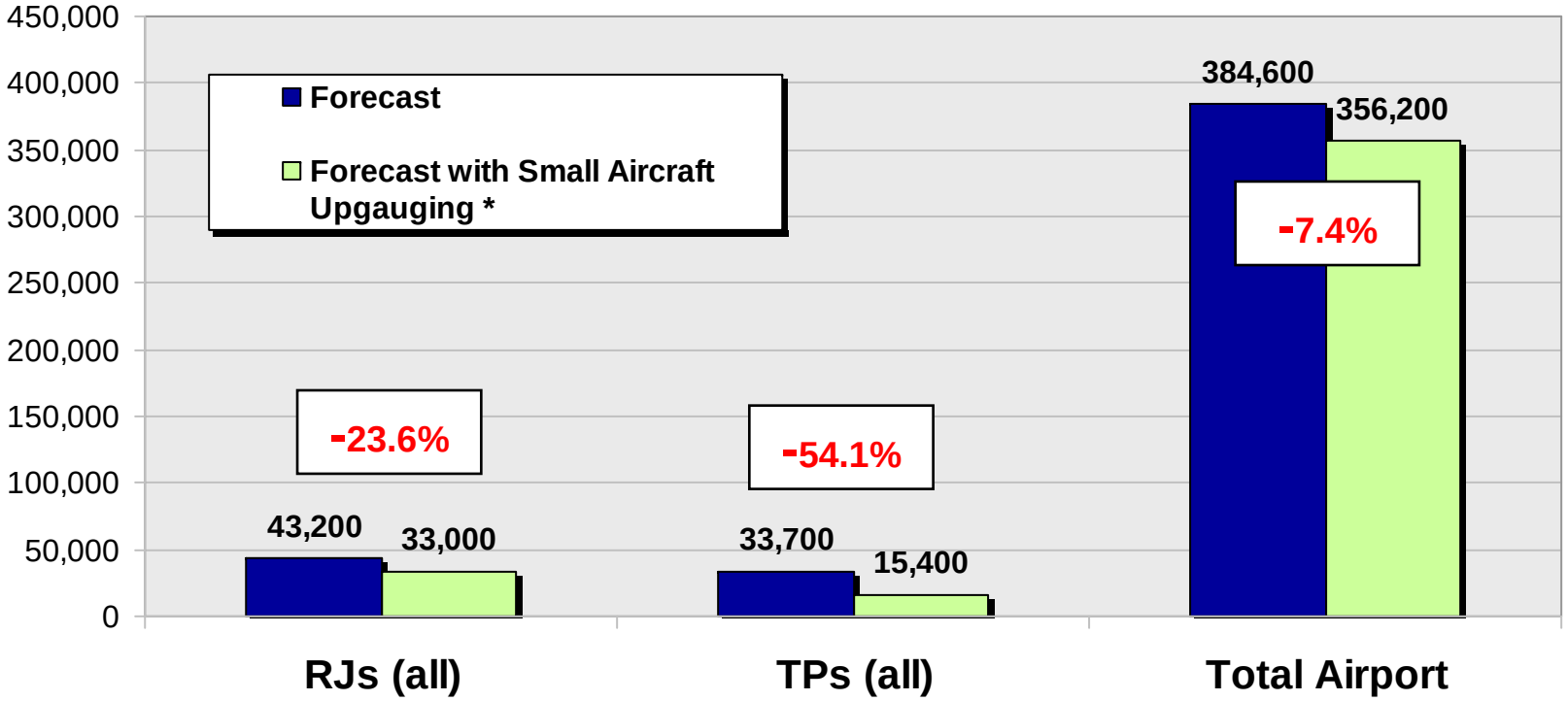


An Effective Demand Management Program Should Accelerate and Increase the Extent of Small Aircraft Upgauging

Accelerating the Upgauging of Small Aircraft Would Reduce SFO's 2020 Passenger Aircraft Operations by 7.4%

Forecast Annual Scheduled Passenger Aircraft Operations at SFO

With and Without Small Aircraft Upgauging



However, Benefits in 2035 Would Require Further Upgauging Within SFO's Domestic Fleet

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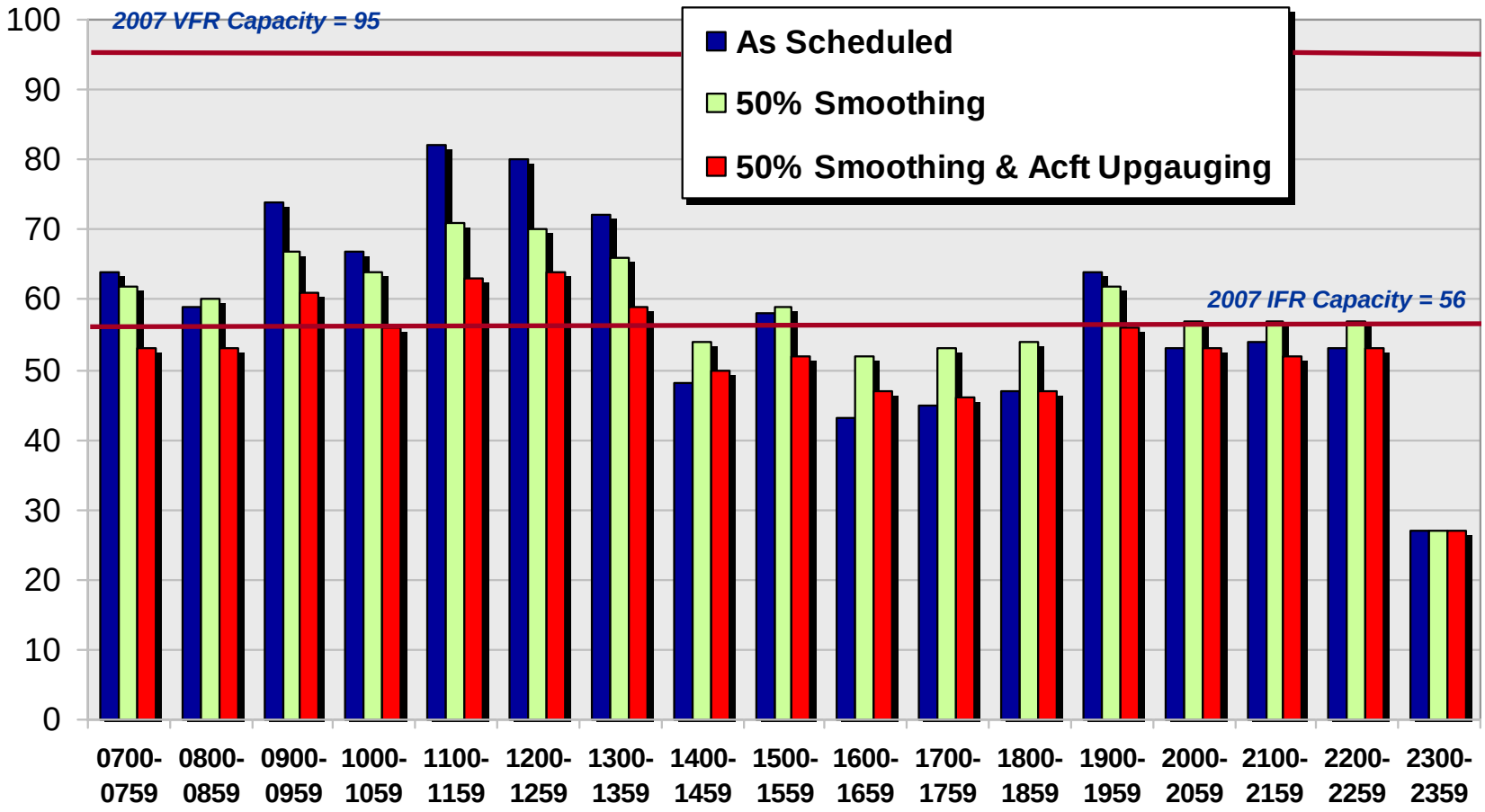
* All regional jets and turboprops with 50 or fewer sets upgauged to 70-seaters.

The Combination of Peak Smoothing and Aircraft Upgauging can have a Significant Impact on Hourly Demand

Example of 2009 SFO Flight Schedule Impacted by Peak Smoothing and Substitution of Larger Aircraft



* Average hourly operations for 07:00 to 21:59
Source: OAG Schedules

Next Steps

- Determine the Extent of Peak Smoothing that is Feasible, Given Scheduling Realities for Domestic and International Airline Service
- Determine the Degree of Aircraft Upgauging that can Realistically Occur
- Adjust SFO Forecasts to Account for Both Factors
- Assess Potential Impacts on SFO Delays, Noise and Air Quality

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APPENDIX

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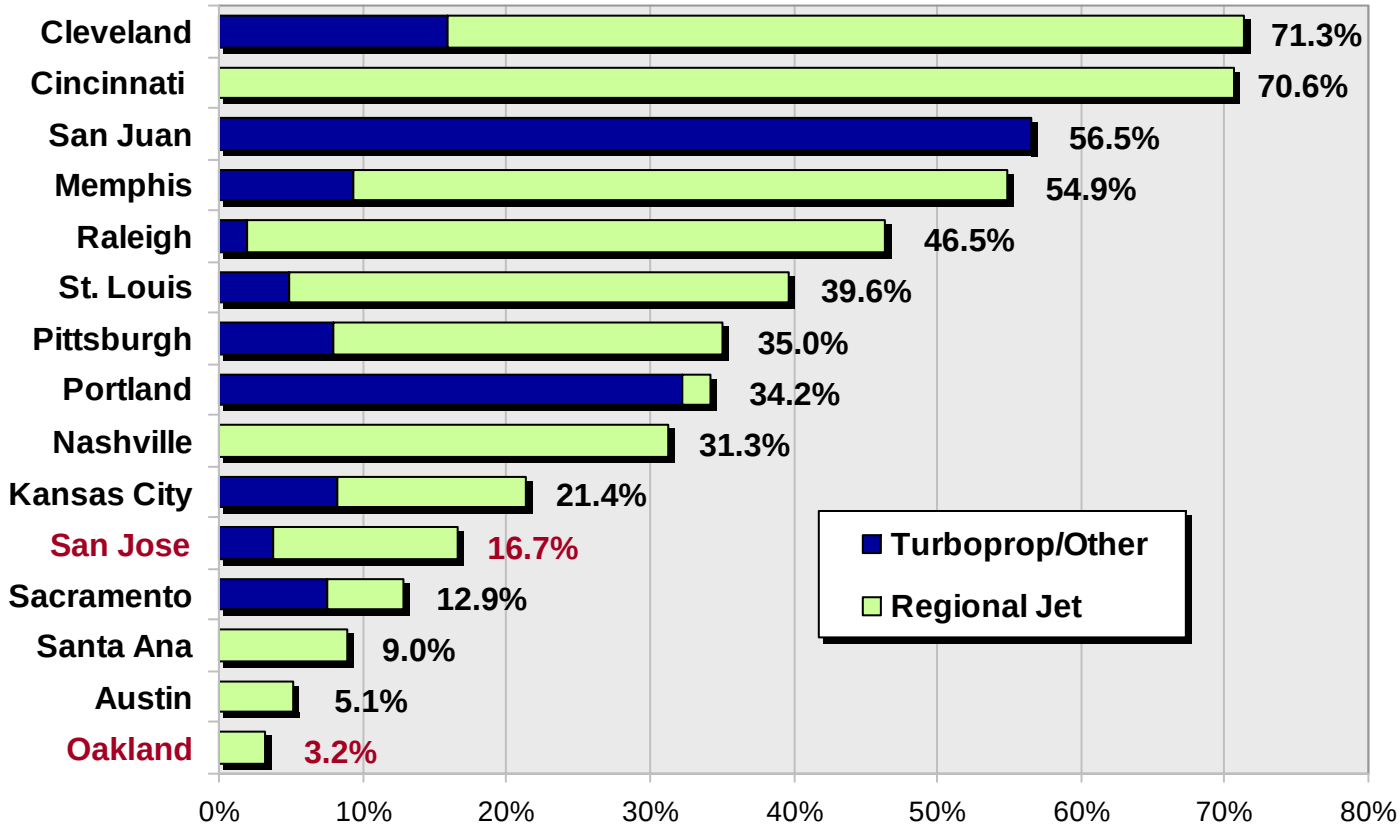
Compared to Other Top Medium Hub Airports, OAK and SJC Also Have Low Shares of Flights Operated with Small Aircraft

Share of Daily Departures Using Regional Jet, Turboprop or Other Aircraft with 50 or Fewer Seats

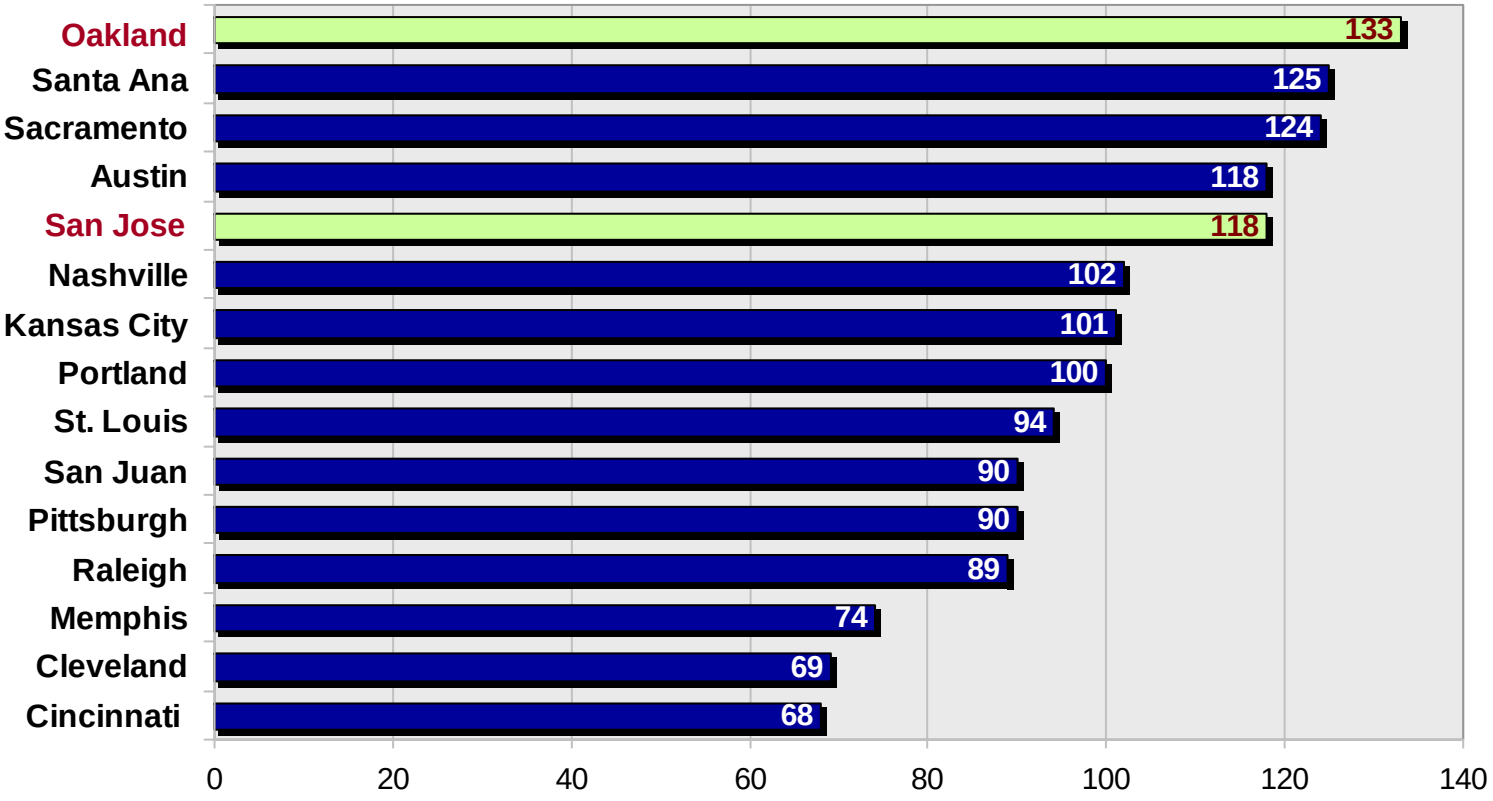
August 2009



Source: OAG Schedules

OAK and SJC Rank in the Top 5 Among Top Medium Hub Airports in Terms of Average Aircraft Size

Average Seats Per Departure at Top 15 Medium Hub Airports
August 2009



Source: OAG Schedules