

## Appendix – Solutions Slides

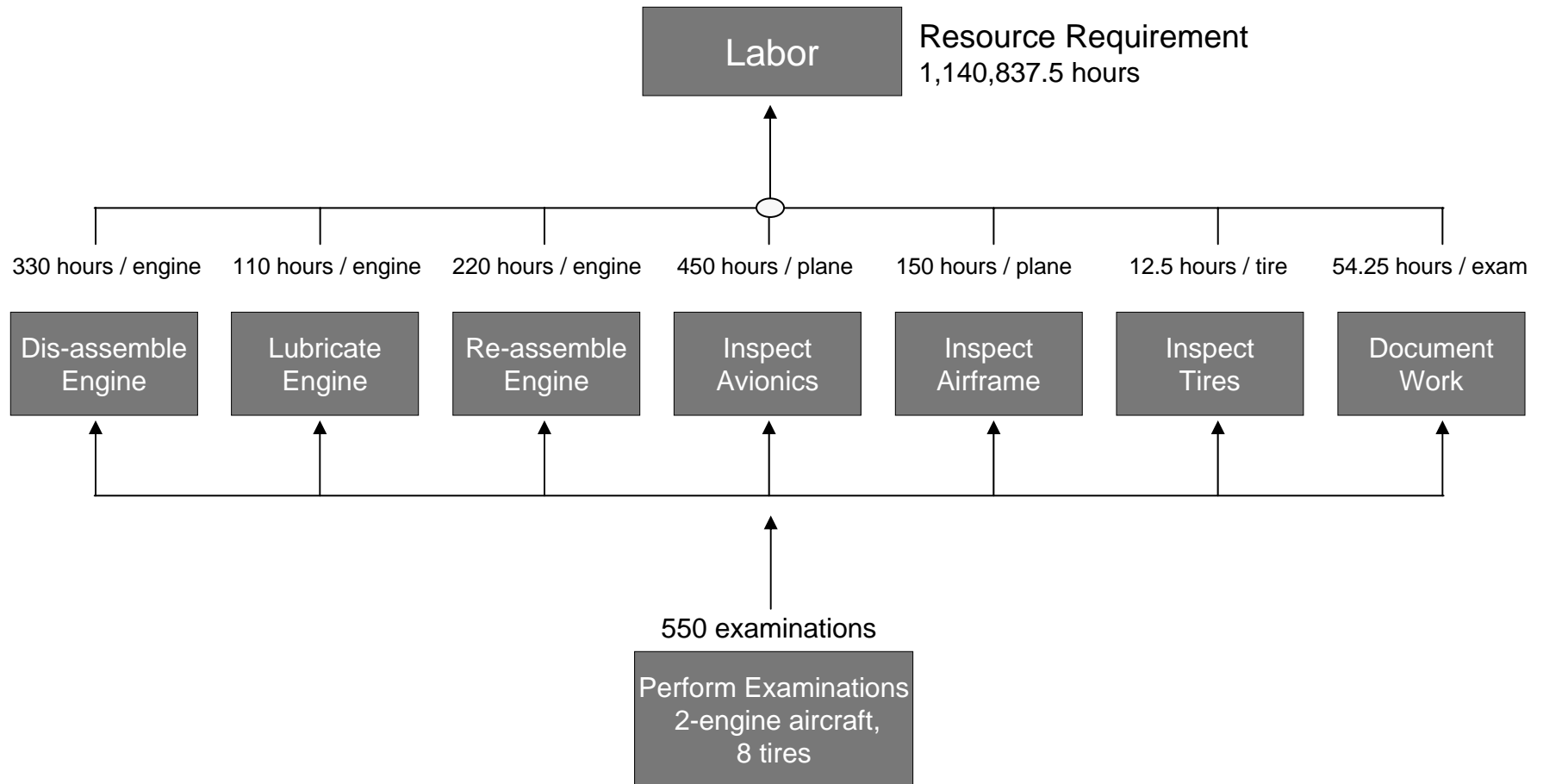
# Planning First: Implementing a New Approach to Corporate Budgeting

## Case Study

## Look at the Results

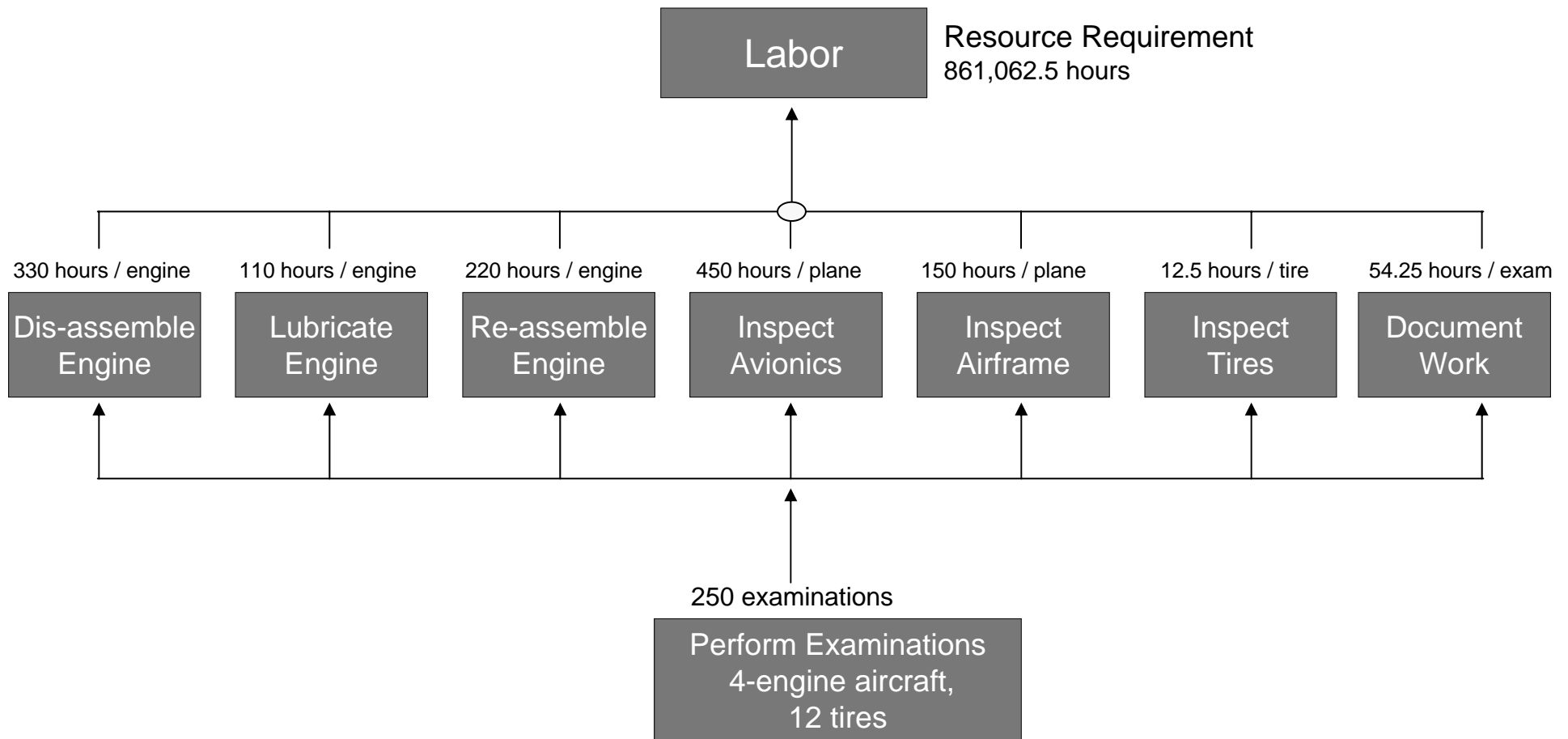
- The initial extrapolation solution suggested a budget of \$113,850,000, or \$72,000 per employee (including 20% expected overtime at premium rates)
- The cascading demand, and correct, solution makes the assumptions but generates a revised budget of \$122,400,000
  - This is 7.5% greater than the extrapolation solution, a rather substantial error, and was caused by changing only one parameter
  - Further, if all of the additional flight hours were undertaken by 4-engine aircraft, the margin of error would be 10%
  - And the example is simplified to avoid violating any step function (capacity) limits
- Key Lessons:
  - Do not extrapolate unless absolutely certain of circumstances
  - Consider the ‘economics’ of service providers when demands change

## Airline Example: Determining Initial Resource Requirement, 2-Engine Aircraft Inspections – Solution



Calculations: 330 hours/engine \* 2 engines/plane \* 550 exams = 363,000 hours etc.

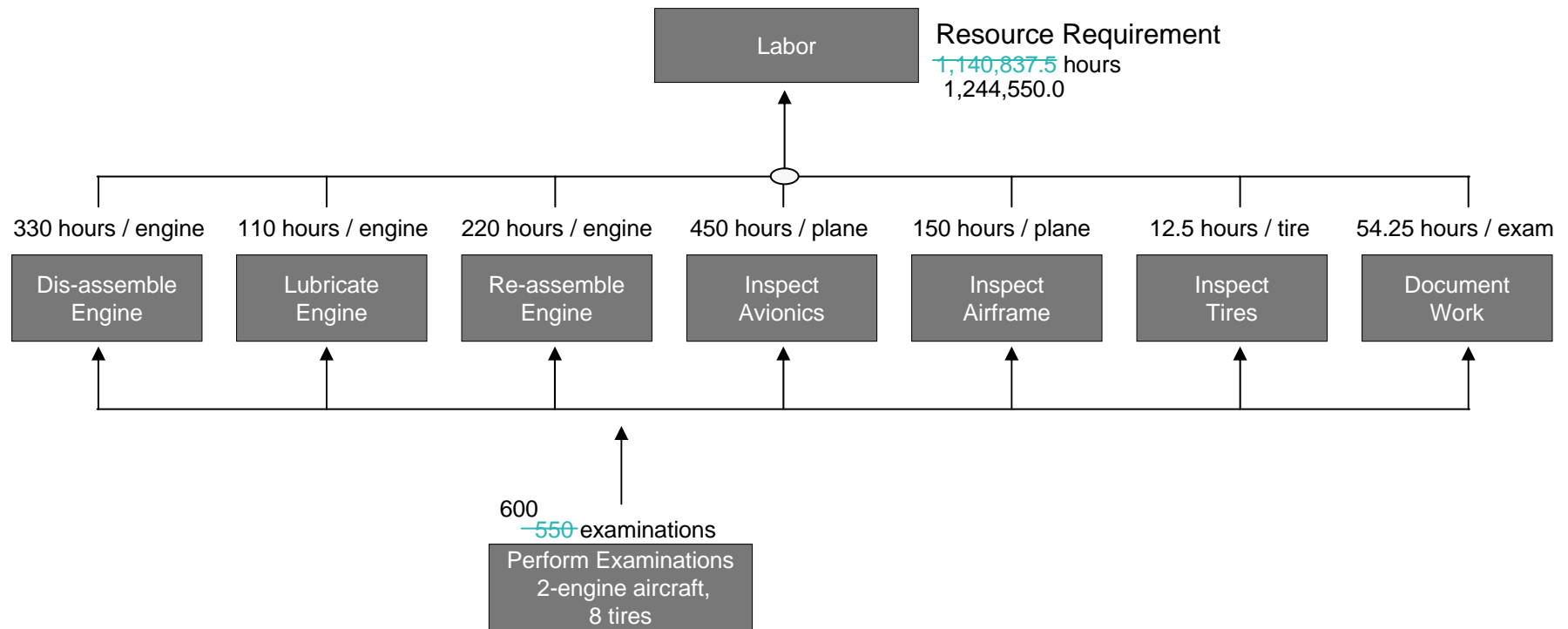
## Airline Example: Determining Initial Resource Requirement, 4-Engine Aircraft Inspections – Solution



Calculations:  $330 \text{ hours/engine} * 4 \text{ engines/plane} * 250 \text{ exams} = 330,000 \text{ hours etc.}$

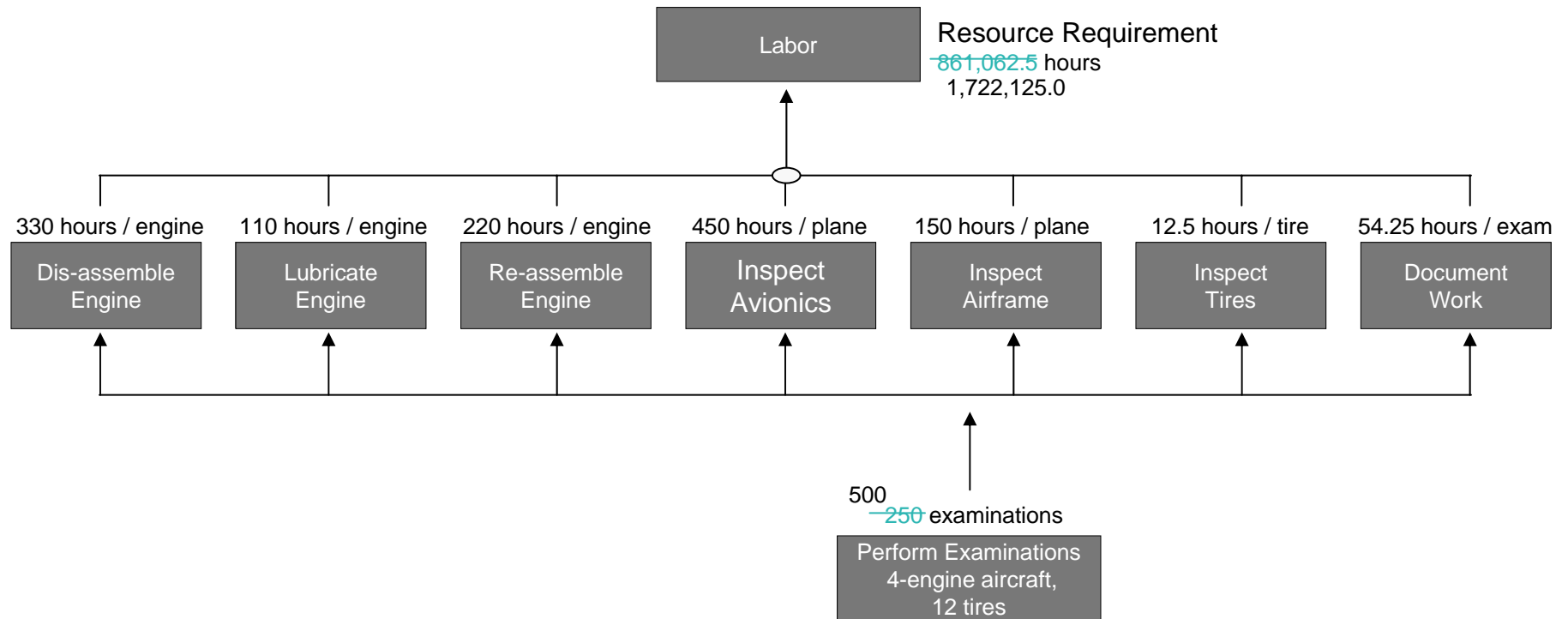
Total labour requirement =  $1,140,837.5 \text{ hours} + 861,062.5 \text{ hours} = 2,001,900 \text{ hours}$ , rounded to 2,000,000 for this example (+3.5% buffer)

## Airline Example: Determining Revised Resource Requirement, 2-Engine Aircraft Inspections – Solution



Calculations:  $330 \text{ hours/engine} * 2 \text{ engines/plane} * 600 \text{ exams} = 396,000 \text{ hours etc.}$

## Airline Example: Determining Revised Resource Requirement, 4-Engine Aircraft Inspections – Solution



Calculations: 330 hours/engine \* 4 engines/plane \* 500 exams = 660,000 hours etc.

Total labour requirement = 1,244,550.0 hours + 1,722,125.0 hours =  
2,966,675.0 hours, +3.5% buffer = 3,070,000 hours (rounded)

## Completing the Revised Solution

- 2,966,675.0 hours + 3.5% buffer results in a labour requirement of 1,700 employees (rounded & based on 1,800 hours worked per employee)
- With the same vacation, overtime, and wage rate assumptions as earlier, the total resource cost is \$122,400,000