Headquarters U.S. Air Force

Integrity - Service - Excellence

AF Process Improvement: Enhancing Materiel Readiness

Lt Col Christopher Burke

Chief, Policy Team

SECAF-CSAF Executive Action Group

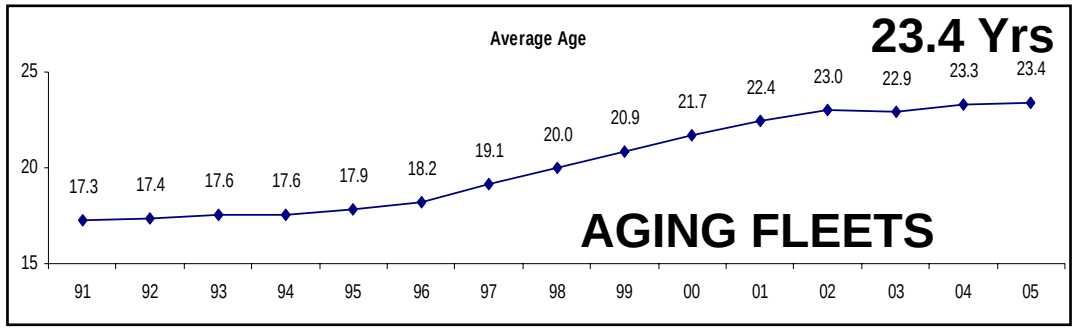
Where The Air Force is Now

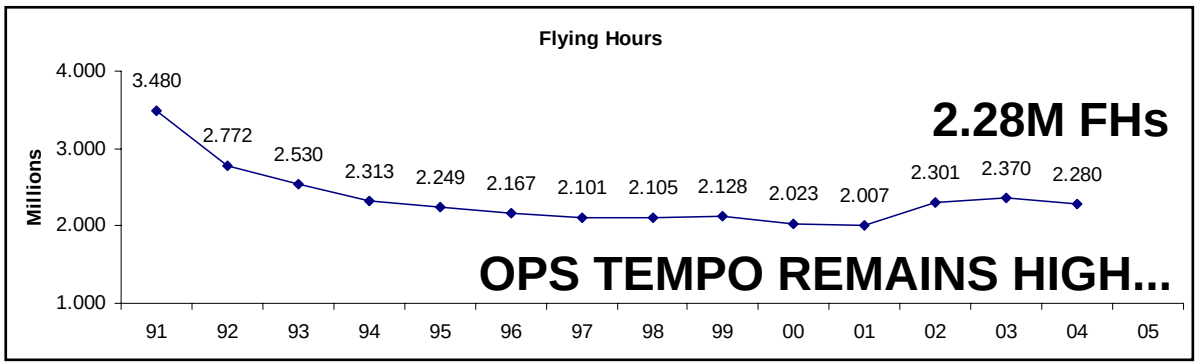
- The perfect storm – a case for change
  - Shrinking budgets
    - Manpower cost rising 6% annually
  - Aging aircraft – *materiel readiness*
    - 23 year old fleet today, 25 years in 2011
- Desired outcome
  - Recapitalize our equipment
    - New weapon systems
  - Become more affordable – *resources $$*
    - Adopt a culture of continuous process improvement

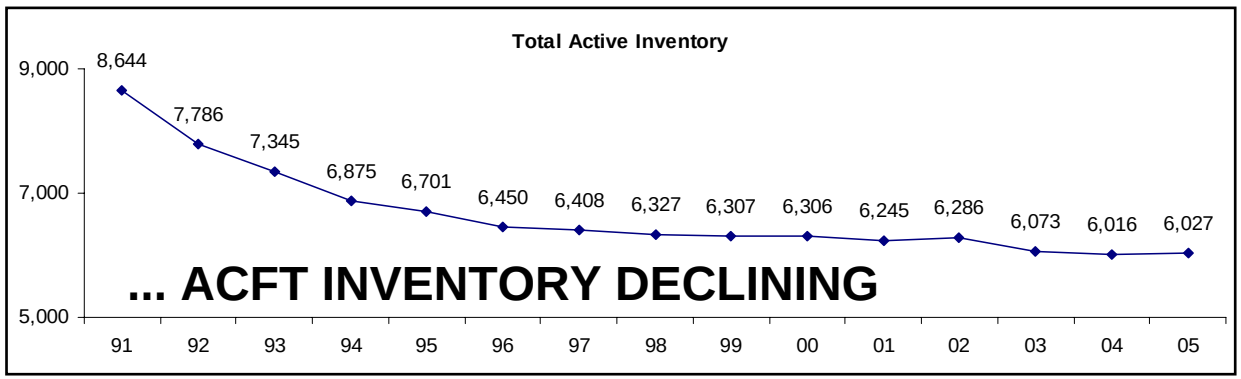
Aggressive changes to processes are required to leverage materiel readiness with available resources

The Case for Change
Expecting More from Aging Fleets

By 2011 with avg 25 Yrs... puts considerable upward pressure on costs



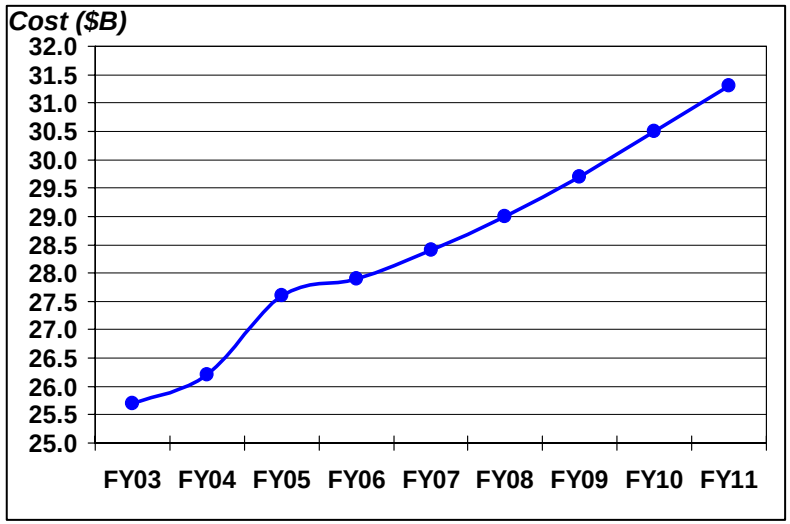




The Case for Change
Rising Operations & Support Costs

- **Rising cost of operations crowds out needed investments**
- **Few tools to address this (BRAC and A-76)**

Overall Aircraft O&S Costs
(FY03/04 Actuals Straightlined)



The victim will be our combat capability

Background

- Installations & Logistics community has been pursuing industrial process improvement methods for about 4 years
  - Command-sponsored approach within Air Force Materiel Command
- Some pocketed “experimentation” in other Air Force functional communities / activities
  - Personnel, medical, equipment management
- Used with great success in many leading companies
  - Toyota, Boeing, General Electric, Pratt & Whitney

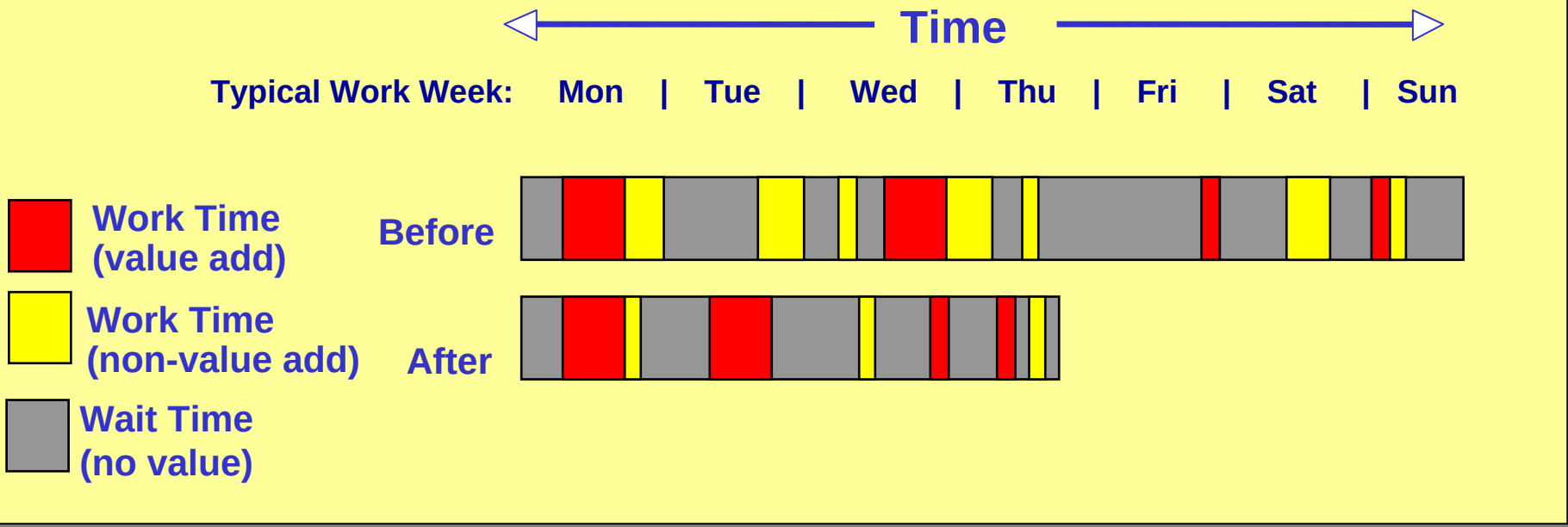
We need a common AF method to focus on process improvement...we need a major cultural change in thinking and philosophy to effect an AF continuous process improvement operating style

Guiding Principles

- Based primarily on Lean process improvement methodology
- Functions as our operating style, not another program
- Retains prime focus on mission effectiveness
- Requires commander involvement, participation, and leadership
- Uses existing governance and compliance structure
- Tied to measurable results in terms of cycle time, quality and resources
- Linked with programming and resourcing activities

This has to improve warfighting effectiveness, or we should not do it!

Benefits
Eliminate Non-Value Added Time



- **Benefits**
  - **Improved operational capability**
  - **Speed, responsiveness, efficiency**
  - **Committed, involved workforce**

Promises and Difficulties

- Air Force advantages
  - Well developed training and education system
  - Well defined lines of authority
  - Dedication of our people
  - Strong sense of mission
  - Common set of core values
  - Strong leadership
- Barriers to implementation
  - Resistance to change
  - Lack of cohesive strategy
  - Organizational/tribal boundaries
  - Budget and time constraints
  - Getting and keeping the “right” people

McChord AFB Wheel and Tire Shop Lean Initiative

- **Supports wheel and tire requirements for 51 assigned aircraft, entire C-17 Pacific Fleet and 5 mainland bases**

Wheel and Tire Shop

- Newly designed facility tears down and rebuilds wheels and tires, serves as central supply point for tire shipping and receiving
- 7 step process reduced to 4

- Bauer torque machine eliminates 2 members to build wheels along with cutting time by 50%
- Non-destructive inspection collocated in Wheel and Tire Shop
  - Eliminates move to NDI Shop and reduces damage

Wheel and Tire Process

PACAF

Stateside

Distribution

McChord

Used Assembly Received

Bead Broke, Disassembled, Washed, NDI

Stored in On-site Supply Point, Ready for Issue

0 → 15 Minutes → 45 Minutes → 15 Minutes → 12 Hour Cure Check

Examined for Depot Asset or Returned to Service. Deflated.

Mounted to new Tire, Torqued, Inflated

Wheel and Tire Production

- Processes over 2,300 wheel and tire assemblies annually
- Annual operating cost of $1.8 Million

- Process improvement effort dropped manning need from 14 personnel to 5

Dover AFB Lean Team
Liquid Oxygen (LOX) Cart Initiative

The Goal

Identify & remove "muda" (waste) from the liquid oxygen cart repair processes and increase cart availability

- **Identified customer:**
  - **Flight line mechanic**
- **Customer defined quality as:**
  - **"Available, serviceable LOX carts to meet mission requirements"**
- **Desired end state:**
  - **When a mechanic calls for a LOX cart, one is available**

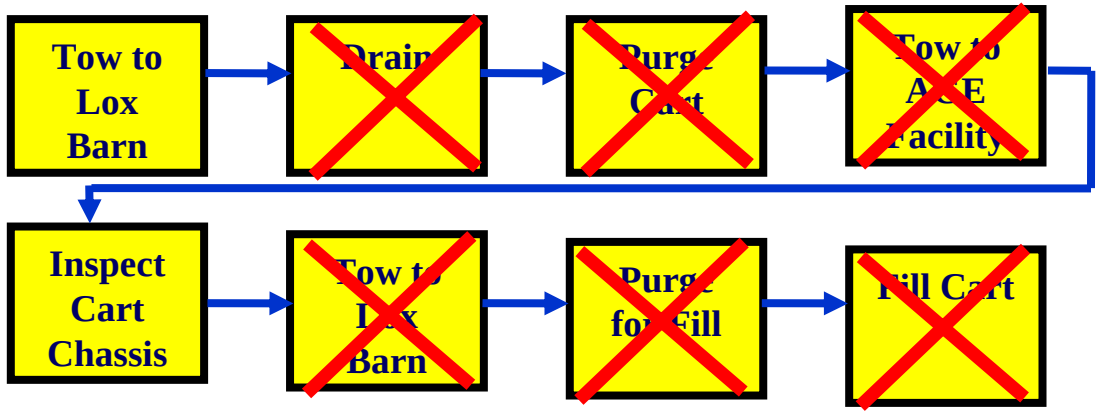
Reasons for lack of cart availability:

Lox cart chassis inspection process takes 5 days

LOX Cart Lean Initiative

180 Day Chassis Inspection Process

New State



Indoor
(Requires Purge)

Outdoor
(No Purge Required)

Field Level Logistics Success Stories

- **Dover AFB: C-5 isochronal inspection process**
  - **Flowdays reduced from 20 to 14 days**
  - **Eliminated mid-shift; better use of 6,000 annual man hours**

- **Langley / Mountain Home AFBs: F-15C aircraft phase**
  - **On time rate increased 87%; Flowdays reduced 30%**
  - **Next steps: Gun Systems and Corrosion Control**

Air Logistics Center Success Stories

- **Tinker AFB: KC-135 aircraft overhaul**
  - Additional 100 aircraft available
  - Flowdays reduced from 380 to 205
  - Reduced number of docks from 18 to 15
  - On-time delivery increased 73%
- **Hill AFB: F-16 wing shop**
  - Flowdays reduced from 64 to 27 days
  - On-time delivery increased to 81%
  - 71% reduction in work in progress
  - Wait time for delivery reduced to 1 day
- **Robins AFB: C-5 aircraft overhaul**
  - Flowdays reduced from 339 to 234
  - Mechanic travel time reduced by 60%
  - Freed up one dock for additional workload

What We Want From a CPI Operating Style

- Ability to deal with declining resources without loss of combat capability or ability to modernize
  - Identify and begin to eliminate the waste inherent in our day-to-day processes
- People who are conscious of the value they deliver and seeking to improve every day
  - Understanding the total role they perform in the end-to-end sustainment chain
- Enhanced ability to accomplish our mission given the balance between materiel readiness and resources
  - Greater agility in response to changing demands

UNITED STATES AIR FORCE

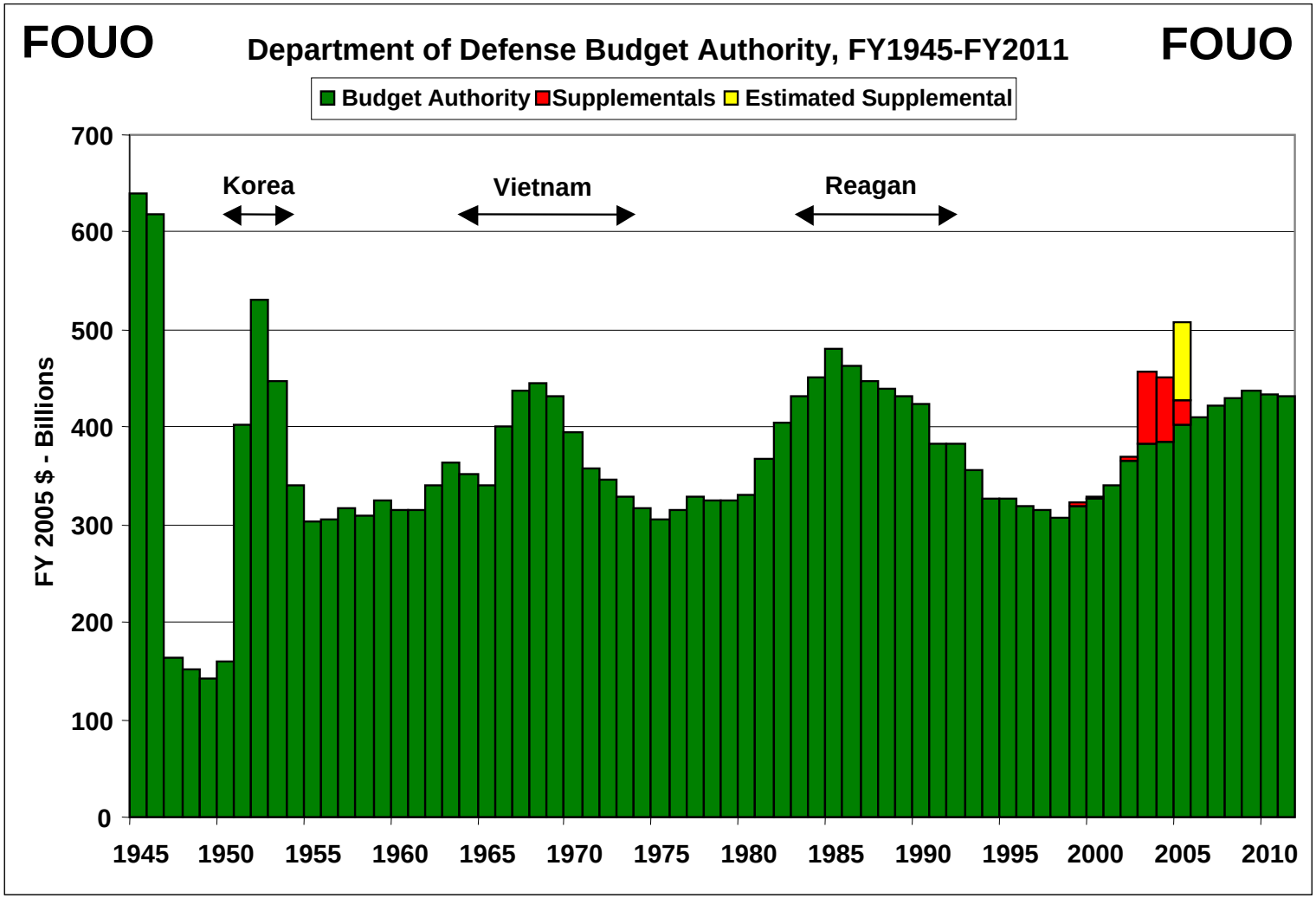
Integrity - Service - Excellence

The Case for Change
The AF Burning Platform

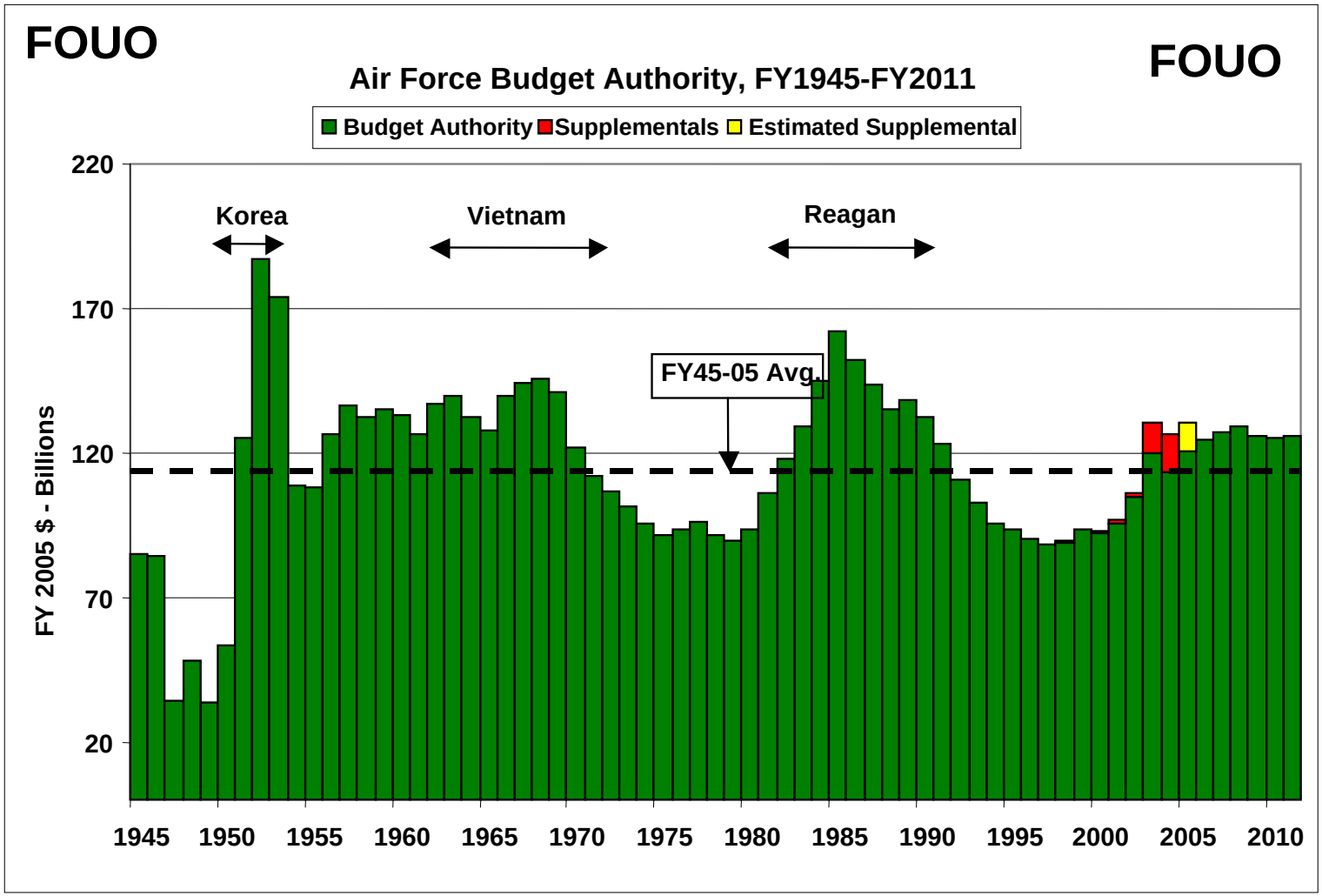
- Operational imperatives
  - Increasing need to quickly respond/adapt to evolving risks
  - Sustaining and winning the global war on terror
- Financial imperatives
  - Increasing competition for dwindling resources
  - Increasing cost of an Airmen ($99K and rising)
  - Reducing cost of ops to invest in future capability
- Workforce imperatives
  - Increasing work week
  - Endstrength reductions with new mission demands
- Infrastructure imperatives
  - Reducing the AF footprint (deployed and home station) consistent with expeditionary mindset

Our Air Force is becoming unaffordable

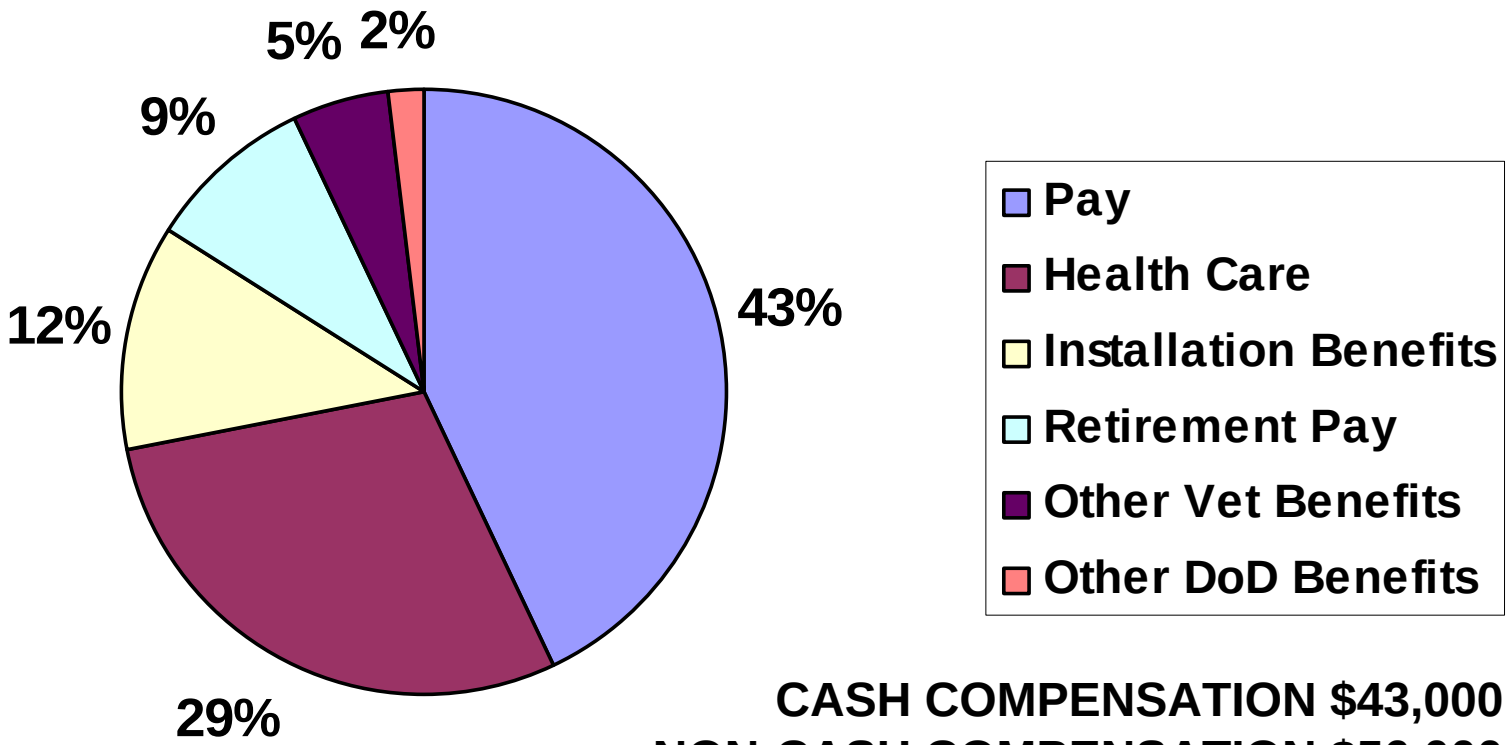
The Case for Change
DoD Budget Authority



The Case for Change
AF Budget Authority



Case for Change
The $100K Airman



CASH COMPENSATION $43,000
NON-CASH COMPENSATION $56,000

Source: CBO Report, 16 Jan 04

"Warfighting Approach" to Address Support Processes/Costs

- Strategy understood by all Airmen
- Measurable goals
- Defined organizational structures and responsibilities
- Clear chain of command and assigned accountability

- Enough data to show this <u>can</u> generate significant improvements across spectrum of AF processes
  - Substantial resource implications – cycle time, dollars, equipment availability, quality, people

Process improvement may be our most important challenge for the next decade

Process Principles

- Any process is better than no process
- A good process is better than a bad process
- One process is better than many processes
- Even a good process can be improved
- All work is process work

Dr. Michael Hammer
Author of The Reengineering Revolution

Process Matters

"At Toyota we get brilliant results from average people managing a brilliant process.

Others get average results from brilliant people managing broken processes."

--The Toyota Motor Company

Washers and Non-Destructive Inspection Station

- 4 parts washers located within the reach of the overhead crane
  - Eliminates 2 members lifting wheel into wash basin
  - 8 wheels washed simultaneously
- Parts cleaner uses eco-safe hardware cleaning product
  - Safe for personnel and eliminated hazardous waste by 50%
- NDI collocated inspection center to the Wheel and Tire Shop
  - Eliminates the need to transport wheels to NDI Shop
  - Reduced wheel damage/physical injury during transport

LOX Cart Lean Initiative

180 Day Chassis Inspection

Total Savings

Reduce Travel Distance by 7,920 Feet / Cart

Eliminate 48 Hours of Downtime per Cart X 12 Carts / Year =
576 Repair Hours / Year

Decreased Downtime → More Available Carts

Other Air Force Success Stories

- **Filling Civilian Positions: Streamlined portions of the end-to-end fill process**
  - **Reduced time from 160 to 120 days**
  - **AFPC increased serviced population 5,000 positions with no additional manpower**

- **AF Civil Engineers: Streamlined Air Force design-build process**
  - **Second pass: Reduced flowdays from 1,046 to 599 days (42%)**

- **AEF Center: Redesigned reclama process**
  - **Reduced steps from 76 to 16**
  - **Reduced flowdays from 131 to 23 days**

Corporate Approach: What It Will Take

- **Commanders committing time -- their time and their Airmen's time**
- **Establishing AF lead and an enabling center for Continuous Process Improvement (CPI)**
- **Training the workforce…developing expertise**
- **Managing priorities…tracking results**
- **Institutionalizing the concept and integrating it into AF change management efforts**

Success Stories
Toyota Motor Co.

- On path to overtake GM as world's #1 auto maker
  - 12% share end of 2004…targeting 15% share
  - 15 of 34 most reliable vehicles from any manufacturer in past 7 years were from Toyota
  - Market cap exceeds the "Big Three" combined
- Toyota Production System is basis for lean production movement dominating manufacturing trends the last 10 years

Revenue	Revenue Growth	Earnings (EBITDA)	Return on Assets	Return on Equity
$163.64B	26.9%	$16.9B	4.75%	13.67%

Success Stories
Dell Inc.

- World's #1 computer systems provider
  - 18.5% of world market…33.4% in the U.S.
- Highly efficient manufacturing and supply chain activities
- Corporate process improvement model (Business Process Improvement) adopted in 1999

Dell Fiscal Year 2005 (Feb. 1, 2004 – Jan. 31, 2005)

Net Revenue	Revenue Growth	Earnings (EBITDA)	Return on Assets	Return on Equity
$49.2B	15%	$4.81B	15.23%	53.56%