

# **USMC Enlisted Endstrength Model**

**MORS Workshop  
Personnel and National Security:  
A Quantitative Approach**

**Working Group #2:  
Models for Managing Retention**

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January 27, 2009

# Report Documentation Page

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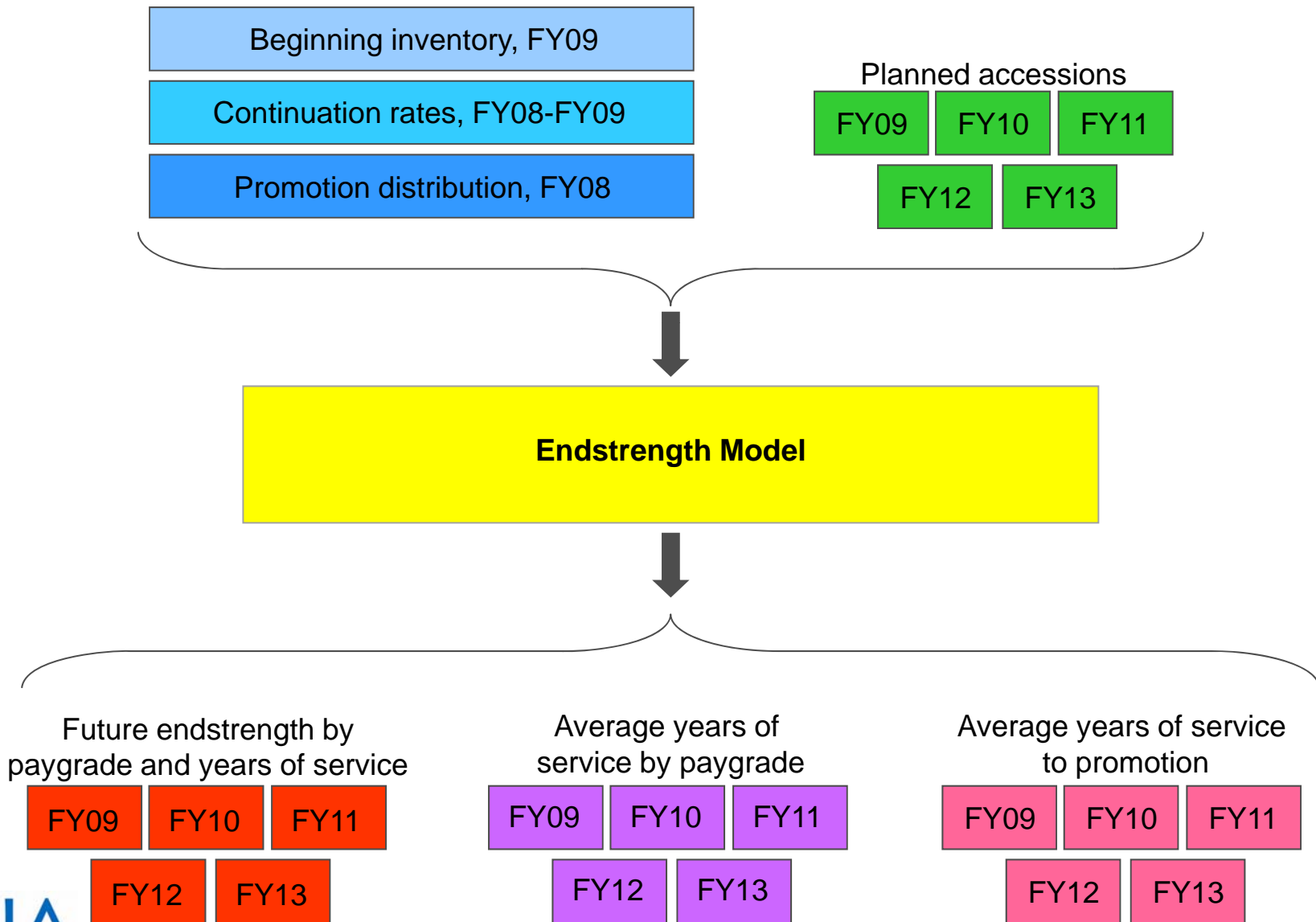
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# Background

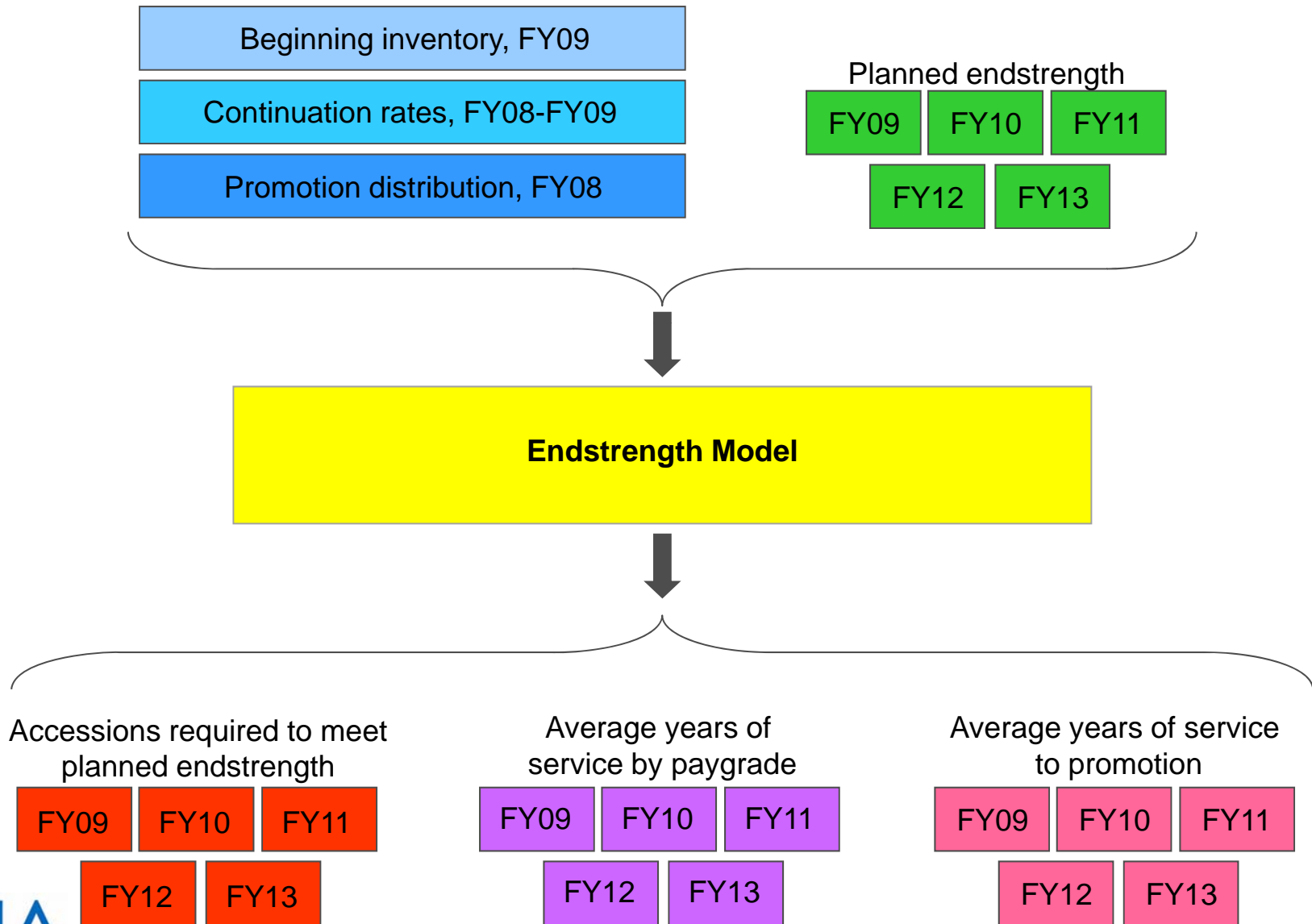
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- This model is an adaptation of an earlier CNA model developed to simulate endstrength changes during the 1990s force drawdown
- The model was updated for use in a project examining various aspects and future sustainability of a USMC force of 202K
  - Predict future enlisted endstrength fixing accessions, or future accessions fixing enlisted endstrength
  - Scenario simulations (ex: change in continuation rates)
- In today's session, I will demonstrate the model's functionality and present some results from scenario simulations

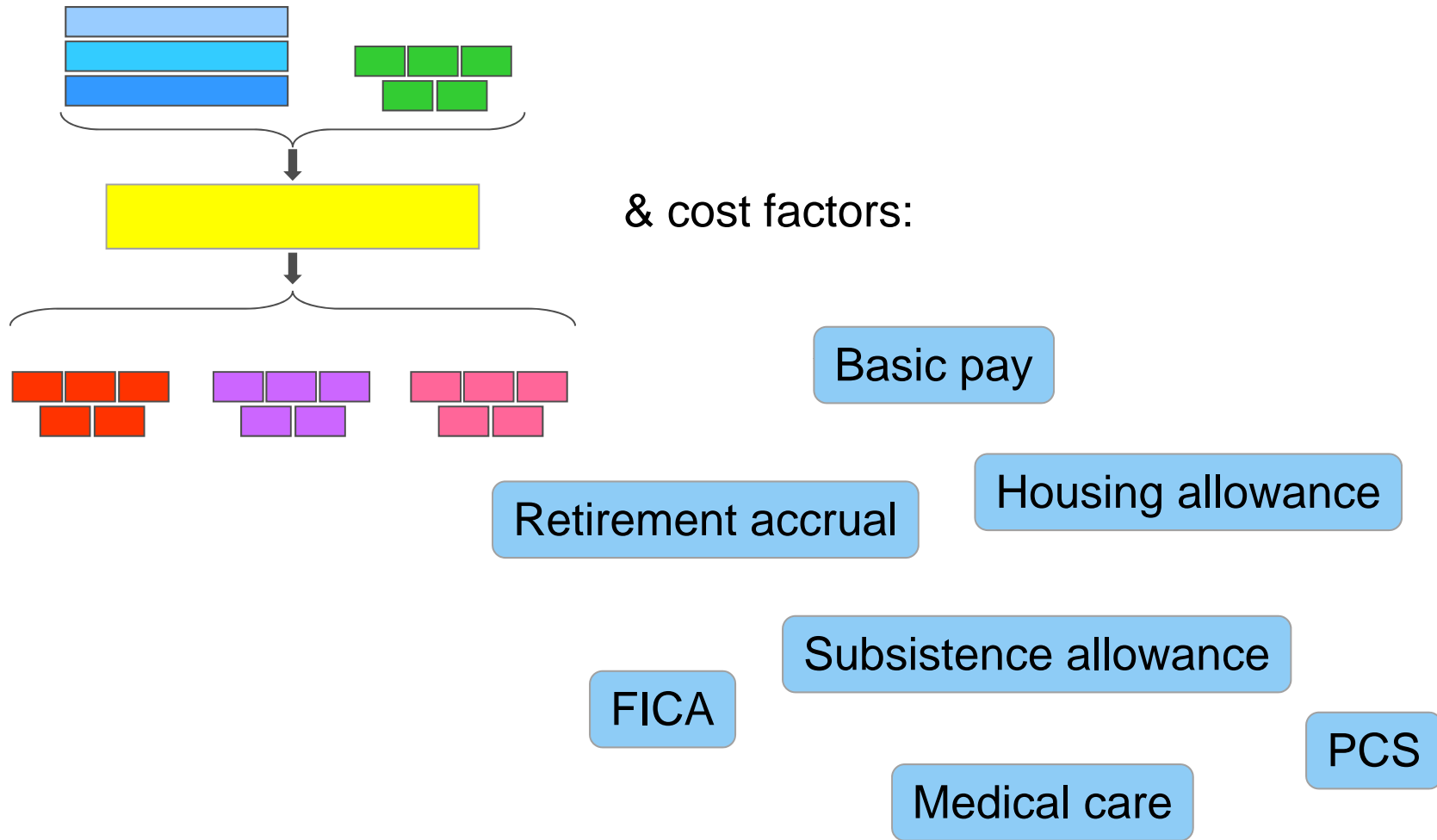
# Endstrength Model overview: Projecting endstrength



# Endstrength Model overview: Projecting accessions



# Cost factors applied to the model's projections



Does not include costs associated with advertising, enlistment bonuses, SRBs, and other reenlistment or separation incentives

**Beginning FY**  2009

**Modify Beginning Inventory**

**Modify Pay Table**

**Modify BAH Costs**

**Modify Retirement Costs**

**Modify Other Costs**

**Modify Inflation Factors**

**Modify Continuation Rates**

**Modify Initial Promotion Distribution**

2009  2010  2011  2012  2013

**Modify Loss\Gain Adjustments for FY**

**Modify Planned ES for Selected FY**

% Accession For First Half of FY

Survival Rate For First Half of FY

Survival Rate For Second Half of FY

2009 Accessions

2010 Accessions

2011 Accessions

2012 Accessions

2013 Accessions

% Accession survivors that are E2s

% Accession survivors that are E3s

% Accession survivors that are E4s

% YOS1 survivors that are E2s

% YOS1 survivors that are E3s

% YOS1 survivors that are E4s

% YOS2 survivors that are E2s

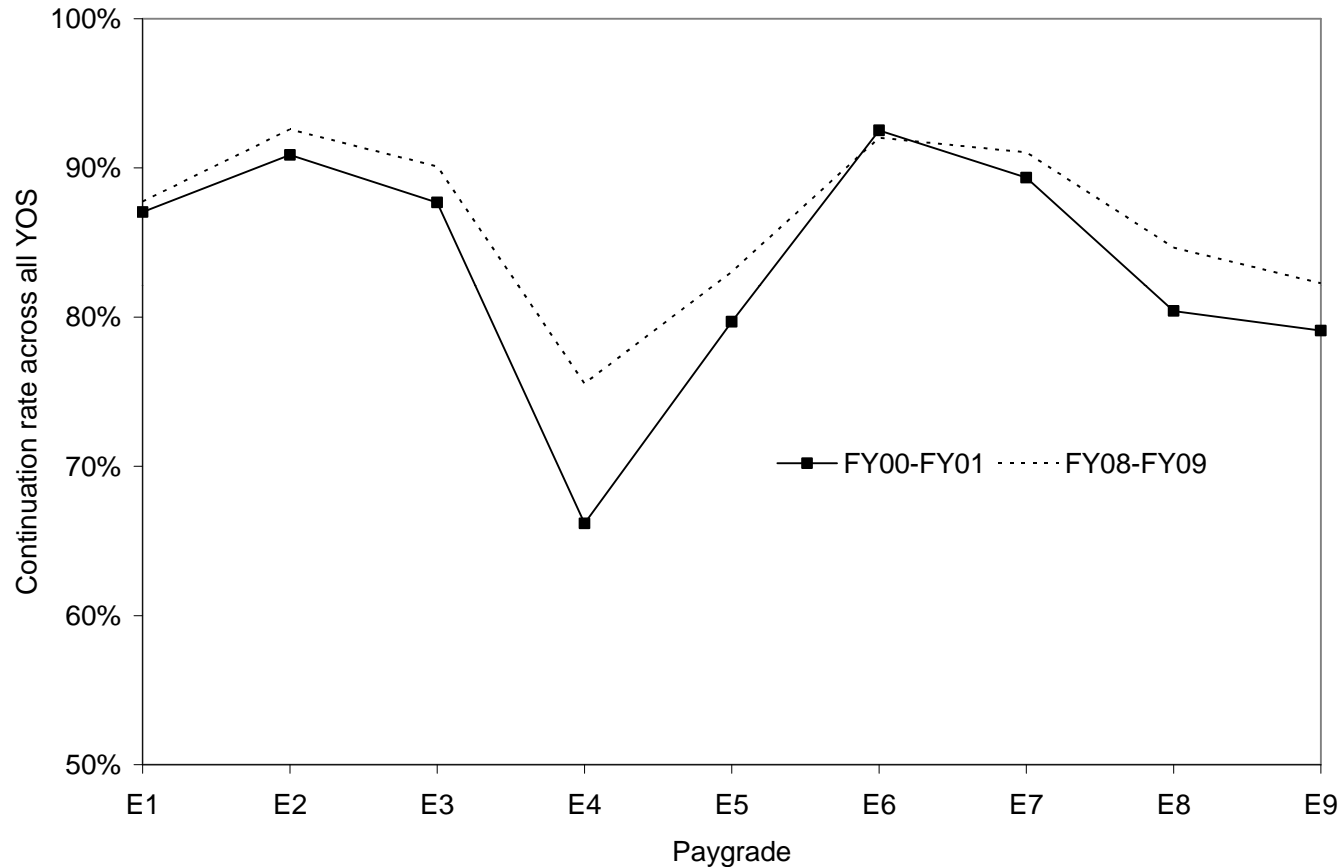
% YOS2 survivors that are E3s

**Endstrength Plan Mode**  
(Leave unchecked for Accession Plan Mode)



# Scenario 1: Force sustainment with high continuation rates

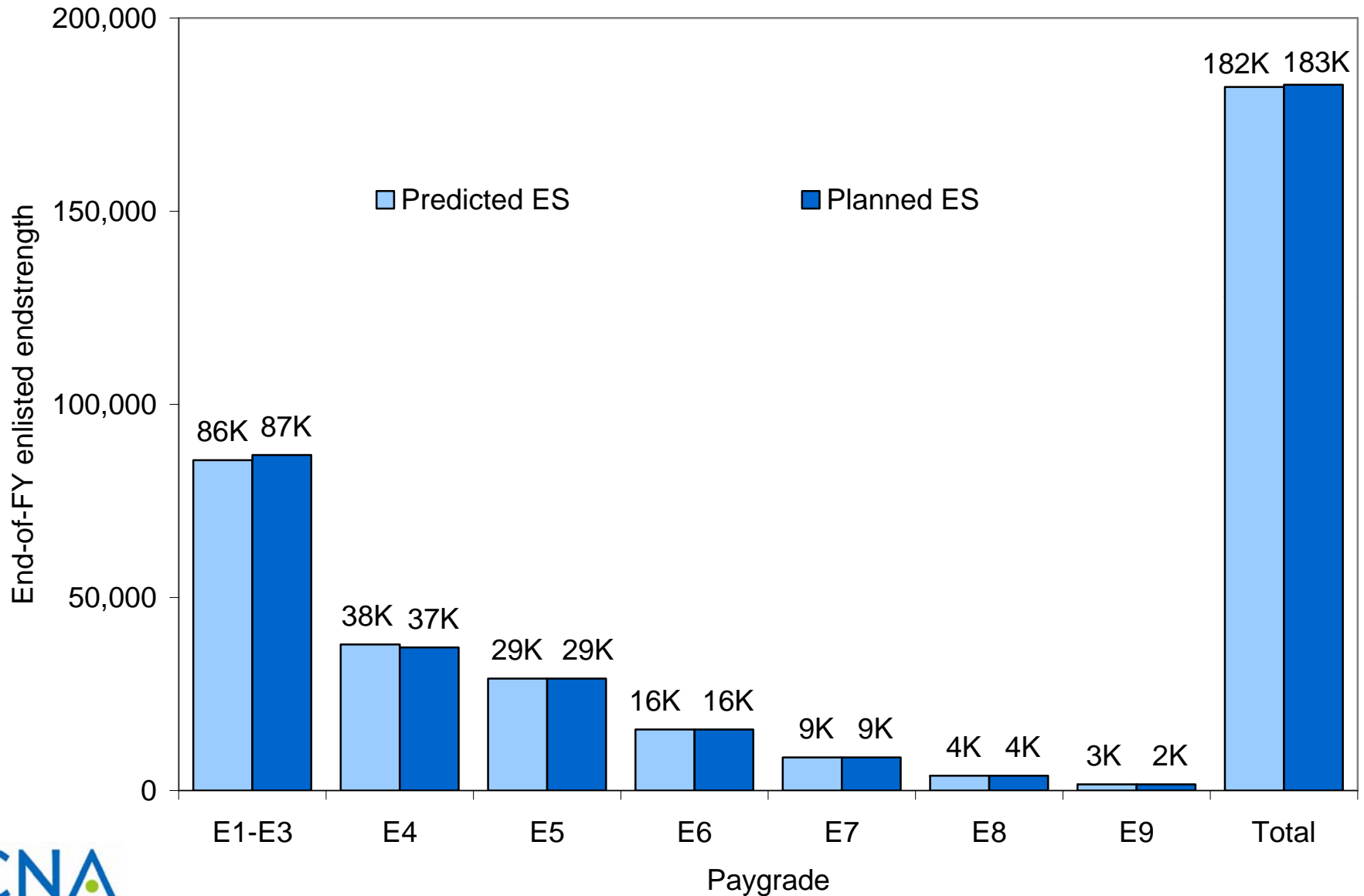
FY08-FY09 continuation rates are 3.1% higher on average than FY00-FY01



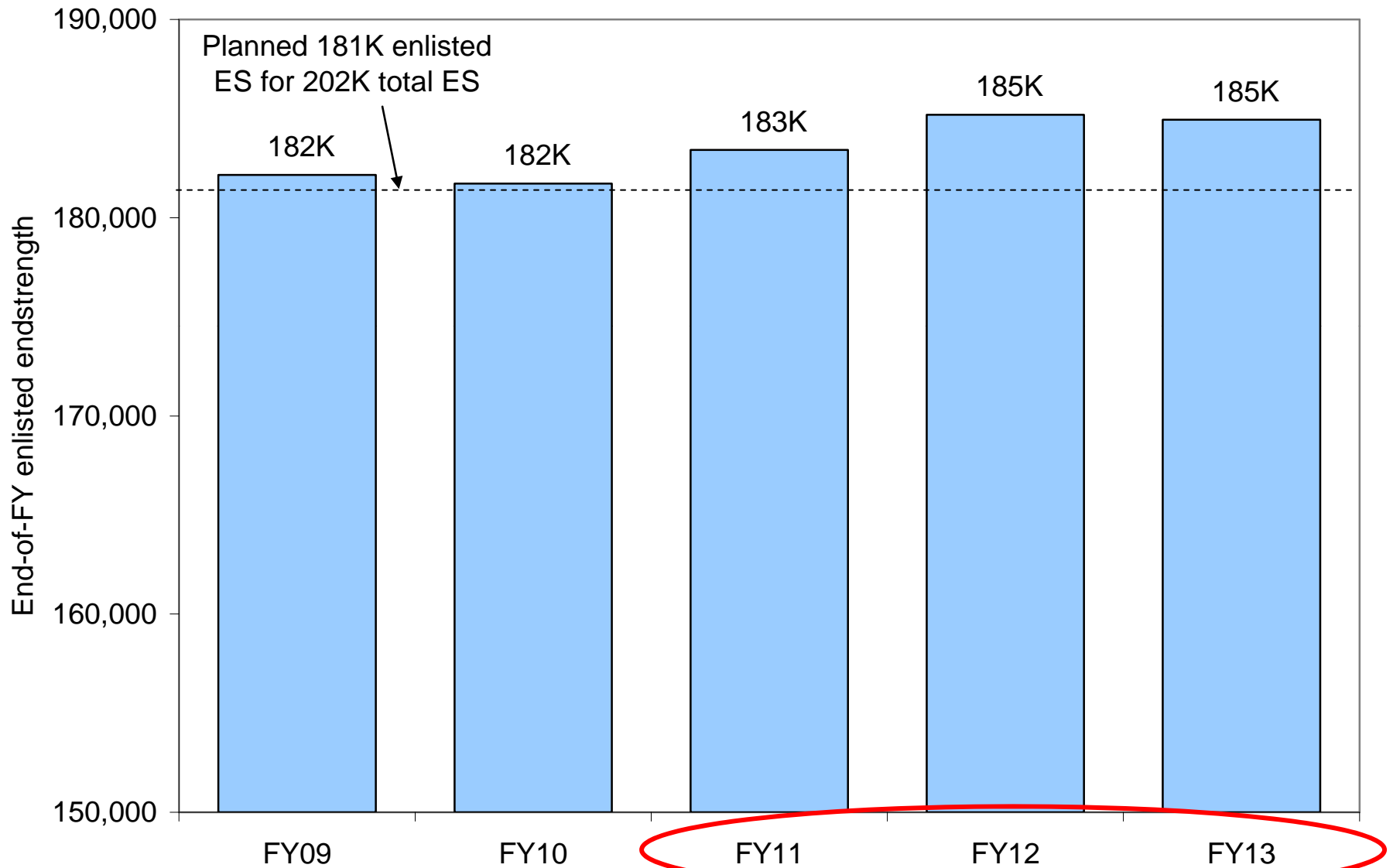
➡ Assume continuation rates stay high through FY 13



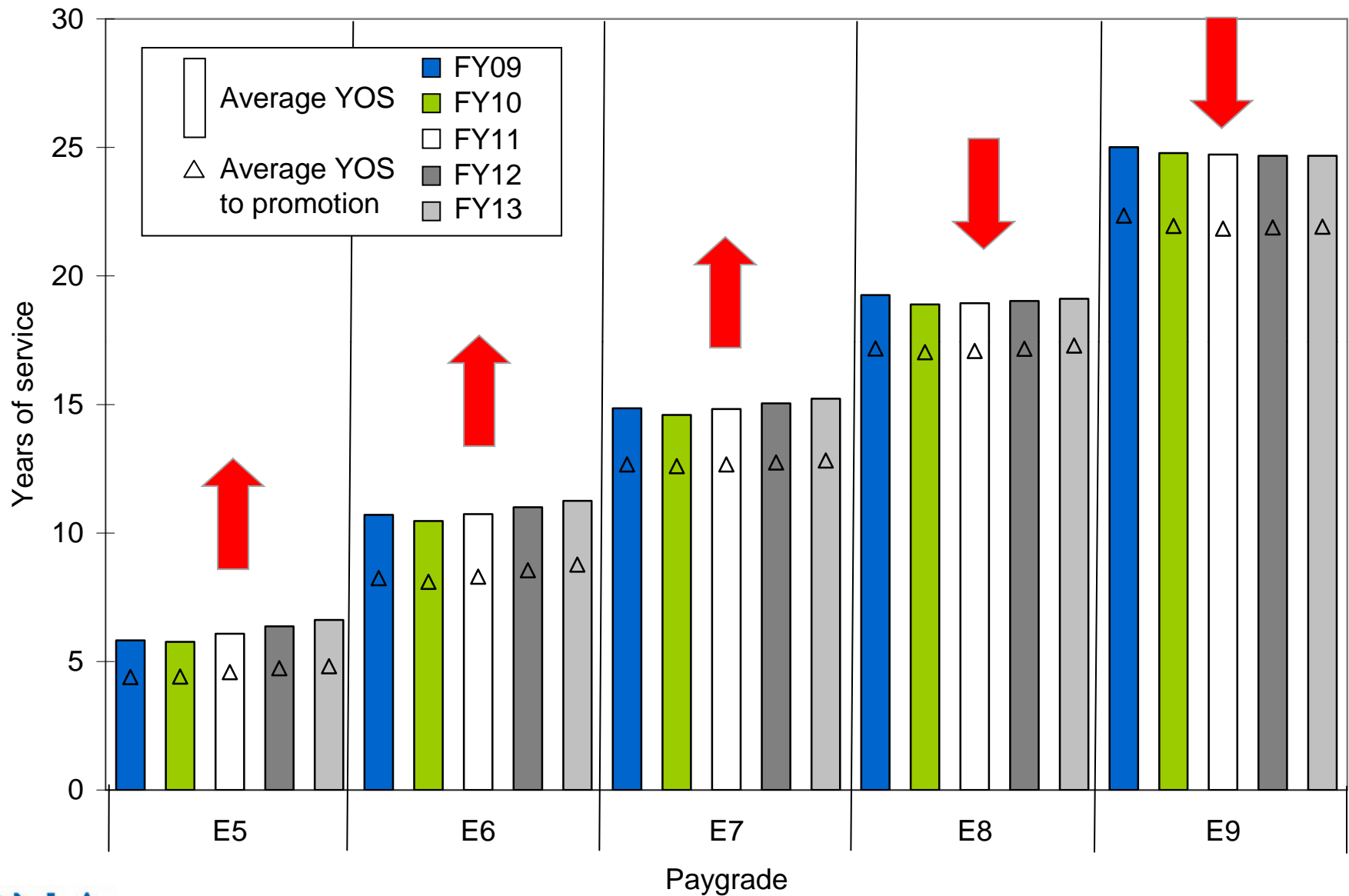
# Scenario 1: End of FY09, model ES meets planned ES



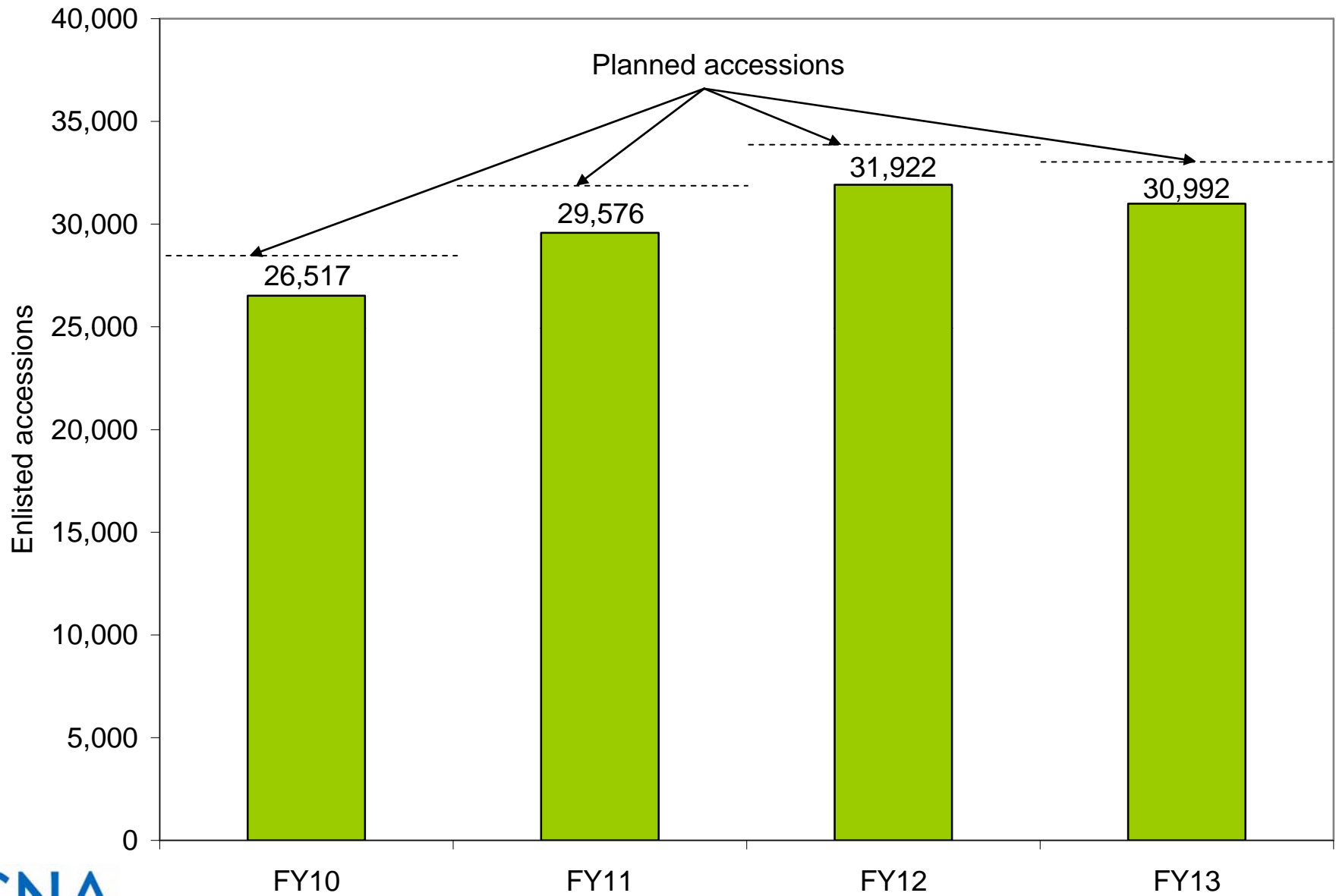
# Scenario 1: FY11-FY13, model ES exceeds planned ES



# Scenario 1: FY09-FY13, seniority and time to promotion



# Scenario 1: FY10-FY13 planned accessions are too high



## Scenario 1: Cost of the force will grow through FY13

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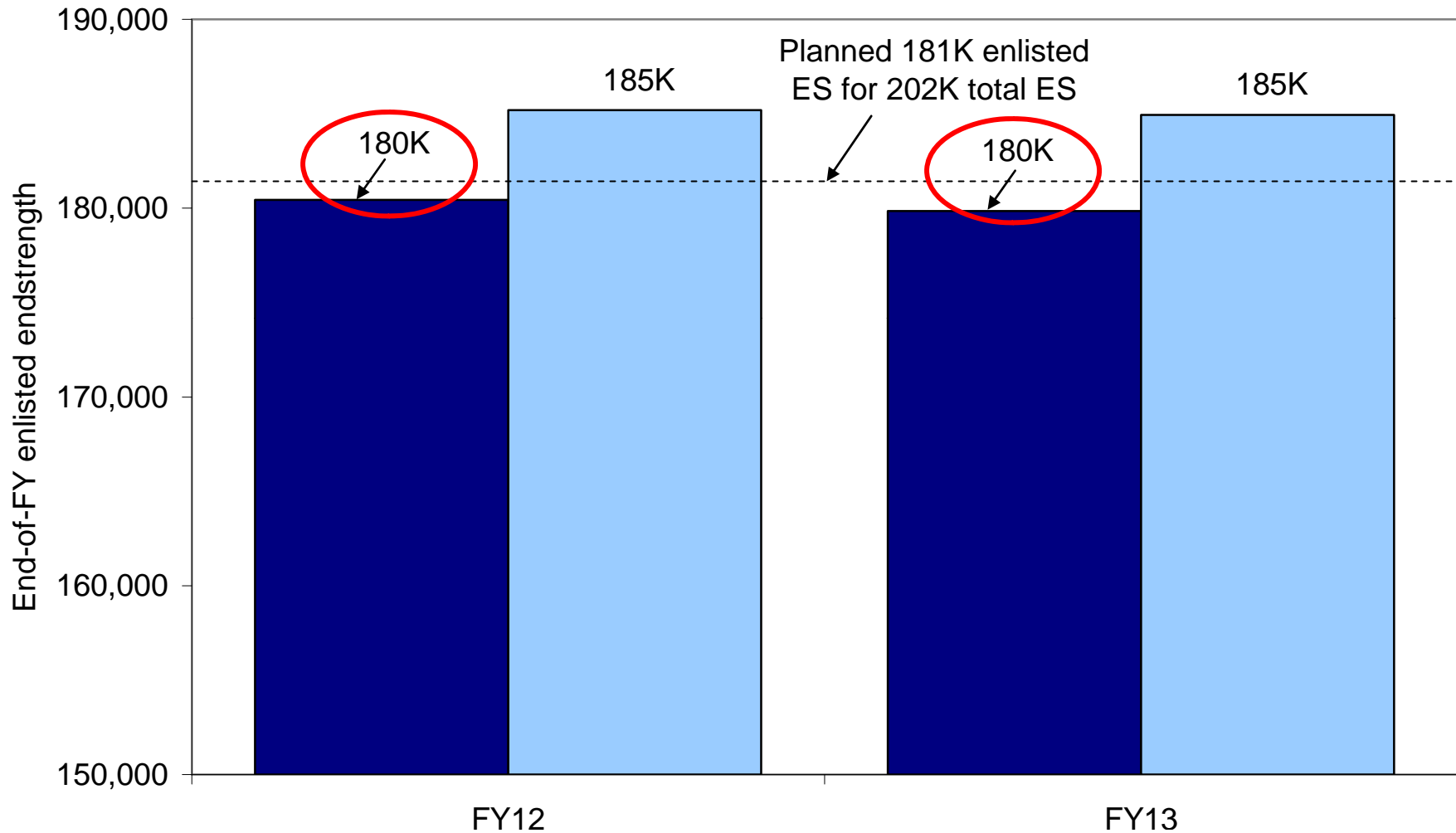
- Cost would increase by 15% over the next five years, from \$15.7 billion in FY09 to \$18.0 in FY13 (in constant FY09 dollars)
  - Excludes advertising, enlistment bonus, SRB, and other reenlistment/separation incentive costs
- Most of the increase can be attributed to increases in basic pay outlays, which would rise by 19%, or from \$5.5 billion to \$5.7 billion
  - 92% of this is due to rising seniority among the ranks
  - Even if the force size stayed constant, increasing seniority alone would cause basic pay outlays to increase by 17%

## Scenario 2: Force sustainment, “normal” continuation rates

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- This scenario assumes that continuation rates remain at the FY08-FY09 level through FY11 and then drop to the FY00-FY01 level in FY12 and FY13
- This drop in continuation rates could come about due to
  - SRB budget reductions
  - High take-up of the post-9/11 GI Bill
  - Higher NEAS attrition rates
  - Stricter enforcement of ECFC policies
  - Separations caused by promotion stagnation to the middle and upper paygrades due to deviations from standard career progression precipitated by rapid 202K growth

## Scenario 2: FY12-FY13, model ES meets planned ES



## Scenario 2: Seniority, time to promotion, and cost

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- Similar impact on average YOS and average YOS to promotion as in scenario 1, but smaller magnitudes
  - Relative to high continuation rates, “normal” continuation rates cause seniority and time to promotion to increase by less
- Cost of the force remains flat at \$15.7 billion through FY13
- Near-zero growth in basic pay outlays
  - Marginally smaller force in FY12 and FY13
    - v.
  - Slightly more senior force in FY12 and FY13 than in earlier years



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# Back up slides

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# FY 2009 Beginning Inventory

	Paygrade								
	E1	E2	E3	E4	E5	E6	E7	E8	E9
0	15,278	16,907	1,841	4	5	9	0	0	0
1	771	5,857	20,963	1,338	12	6	0	0	0
2	326	992	13,885	9,708	253	10	0	0	0
3	215	506	5,566	15,665	2,406	17	0	1	1
4	61	77	760	6,449	6,057	24	0	0	0
5	33	26	172	2,055	6,179	123	7	0	0
6	17	15	89	607	5,006	545	7	1	0
7	17	8	42	304	3,959	1,126	5	0	0
8	11	2	13	93	2,162	1,832	16	0	1
9	6	0	6	45	1,068	2,266	53	0	0
10	6	1	1	27	667	2,348	165	2	0
11	1	1		11	439	2,144	537	2	0
12	4	1	3	11	224	1,466	925	4	0
13	4	0	0	2	35	926	1,058	28	1
14	0	0	0	1	17	622	1,141	70	1
15	2	0	0	0	9	545	1,161	164	4
16	3	2	0	0	2	388	969	293	4
17	2	1	0	1	5	325	736	447	7
18	2	0	0	0	3	258	607	565	14
19	2	0	1	1	2	195	521	626	26
20	1	0	0	0	0	25	202	505	49
21	1	0	0	0	1	4	93	410	86
22	0	0	0	0	0	0	22	327	108
23	1	0	0	0	0	1	7	220	156
24	0	0	0	0	0	0	1	168	216
25	1	0	0	0	0	0	0	55	203
26	0	0	0	0	0	1	1	34	195
27	1	0	0	0	0	0	0	4	192
28	2	0	0	0	0	0	0	2	154
29	2	0	0	0	0	0	0	0	147
30	5	0	2	0	0	0	0	0	43

SAVE

BACK



# FY 2008-2009 Continuation Rates

	Paygrade								
	E1	E2	E3	E4	E5	E6	E7	E8	E9
0	0.91	0.95	0.97	0.43	0.03	1.00	0.00	0.00	0.00
1	0.69	0.94	0.97	0.98	0.84	1.00	0.00	0.00	0.00
2	0.50	0.86	0.96	0.98	0.94	1.00	0.00	0.00	0.00
3	0.20	0.30	0.47	0.58	0.62	0.76	1.00	0.00	0.00
4	0.22	0.37	0.43	0.70	0.78	0.95	1.00	0.00	0.00
5	0.38	0.64	0.76	0.92	0.95	0.91	1.00	0.00	0.00
6	0.32	0.86	0.81	0.88	0.96	0.97	0.80	0.00	0.00
7	0.20	0.25	0.29	0.45	0.77	0.85	0.79	0.00	0.00
8	0.38	0.00	0.30	0.49	0.85	0.88	0.96	0.00	0.00
9	0.36	0.00	0.50	0.70	0.92	0.94	0.94	1.00	0.00
10	0.00	0.00	1.00	0.60	0.91	0.94	0.92	1.00	0.00
11	0.40	0.00	1.00	0.47	0.76	0.93	0.91	1.00	0.00
12	0.40	0.00	0.00	0.25	0.40	0.95	0.95	0.83	0.50
13	0.00	0.00	0.00	0.00	0.61	0.96	0.97	1.00	1.00
14	0.20	0.00	0.00	0.00	0.69	0.95	0.97	1.00	0.00
15	0.33	0.00	0.00	0.00	0.67	0.97	0.97	0.98	1.00
16	0.33	0.00	0.00	0.00	0.86	0.96	0.99	1.00	1.00
17	0.50	0.00	0.00	0.00	0.75	0.98	0.99	1.00	1.00
18	1.00	0.00	1.00	0.00	0.60	1.00	1.00	1.00	1.00
19	0.50	0.00	0.00	0.00	0.14	0.12	0.48	0.83	0.96
20	0.00	0.00	0.00	0.00	0.00	0.12	0.48	0.78	0.90
21	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.79	0.90
22	0.50	0.00	0.00	0.00	0.00	0.50	0.31	0.79	0.93
23	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.77	0.89
24	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.91
25	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.58	0.88
26	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.89
27	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.88
28	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.88
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24
30	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.19

SAVE

BACK



# FY 2008 Promotion Distribution

	Paygrade							
	E2	E3	E4	E5	E6	E7	E8	E9
0	0.96	0.73	0.03	0.00	0.00	0.00	0.00	0.00
1	0.03	0.24	0.45	0.02	0.00	0.00	0.00	0.00
2	0.01	0.03	0.42	0.22	0.00	0.00	0.00	0.00
3	0.00	0.01	0.08	0.42	0.00	0.00	0.00	0.00
4	0.00	0.00	0.01	0.22	0.02	0.00	0.00	0.00
5	0.00	0.00	0.00	0.08	0.11	0.00	0.00	0.00
6	0.00	0.00	0.00	0.03	0.19	0.00	0.00	0.00
7	0.00	0.00	0.00	0.01	0.25	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.21	0.01	0.00	0.00
9	0.00	0.00	0.00	0.00	0.11	0.06	0.00	0.00
10	0.00	0.00	0.00	0.00	0.06	0.19	0.00	0.00
11	0.00	0.00	0.00	0.00	0.03	0.26	0.00	0.00
12	0.00	0.00	0.00	0.00	0.01	0.22	0.02	0.00
13	0.00	0.00	0.00	0.00	0.00	0.12	0.04	0.00
14	0.00	0.00	0.00	0.00	0.00	0.06	0.10	0.01
15	0.00	0.00	0.00	0.00	0.00	0.04	0.17	0.00
16	0.00	0.00	0.00	0.00	0.00	0.02	0.22	0.01
17	0.00	0.00	0.00	0.00	0.00	0.01	0.21	0.03
18	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.05
19	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.07
20	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.15
21	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.14
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Years of service

SAVE

BACK

# FY 2009 Loss/Gain Adjustments

	Paygrade								
	E1	E2	E3	E4	E5	E6	E7	E8	E9
0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0

Years of service

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# FY 2009 Planned Endstrength

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Paygrade	Planned endstrength
E1	11,478
E2	23,614
E3	51,776
E4	37,026
E5	29,003
E6	15,832
E7	8,572
E8	3,837
E9	1,578
Total	182,716

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