

# Base Operations Requirements Generation Process

Using

## Standard Service Costing

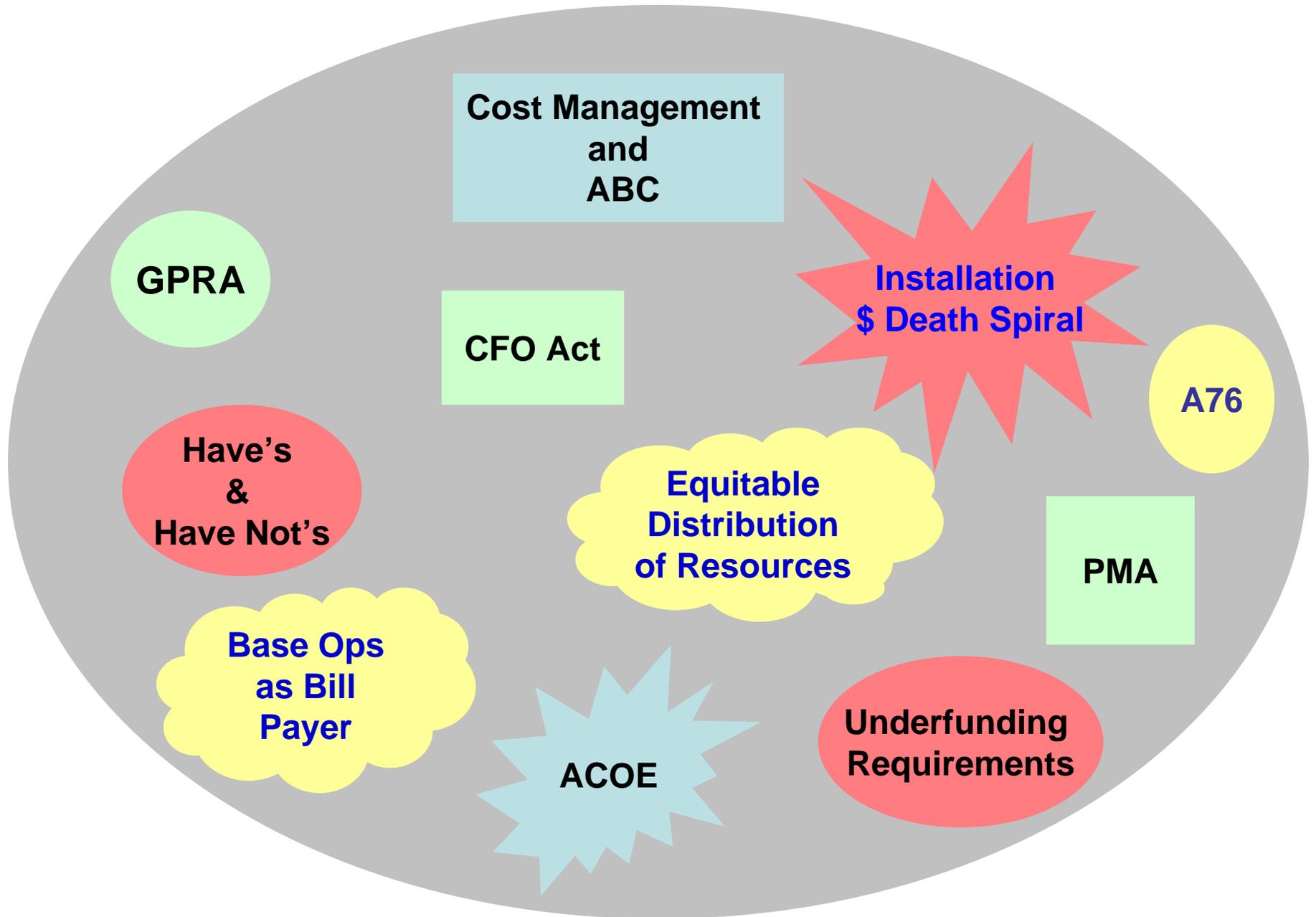
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# Agenda

- **Why Standard Service Costing?**
- Requirements Generation Process
  - Service Based Costing & Installation Status Report
  - Standard Service Costing
  - Base Operations Requirements
- Food Services Analysis

# Base Operation Operating Environment



# Why Standard Service Costing

## - Standard Service Costing (SSC):

A **Methodology** Used to Develop **Predictive** Cost Equations to Estimate What a Service **“Should” Cost** Based on **“Performance Standards”**.

## - Why:

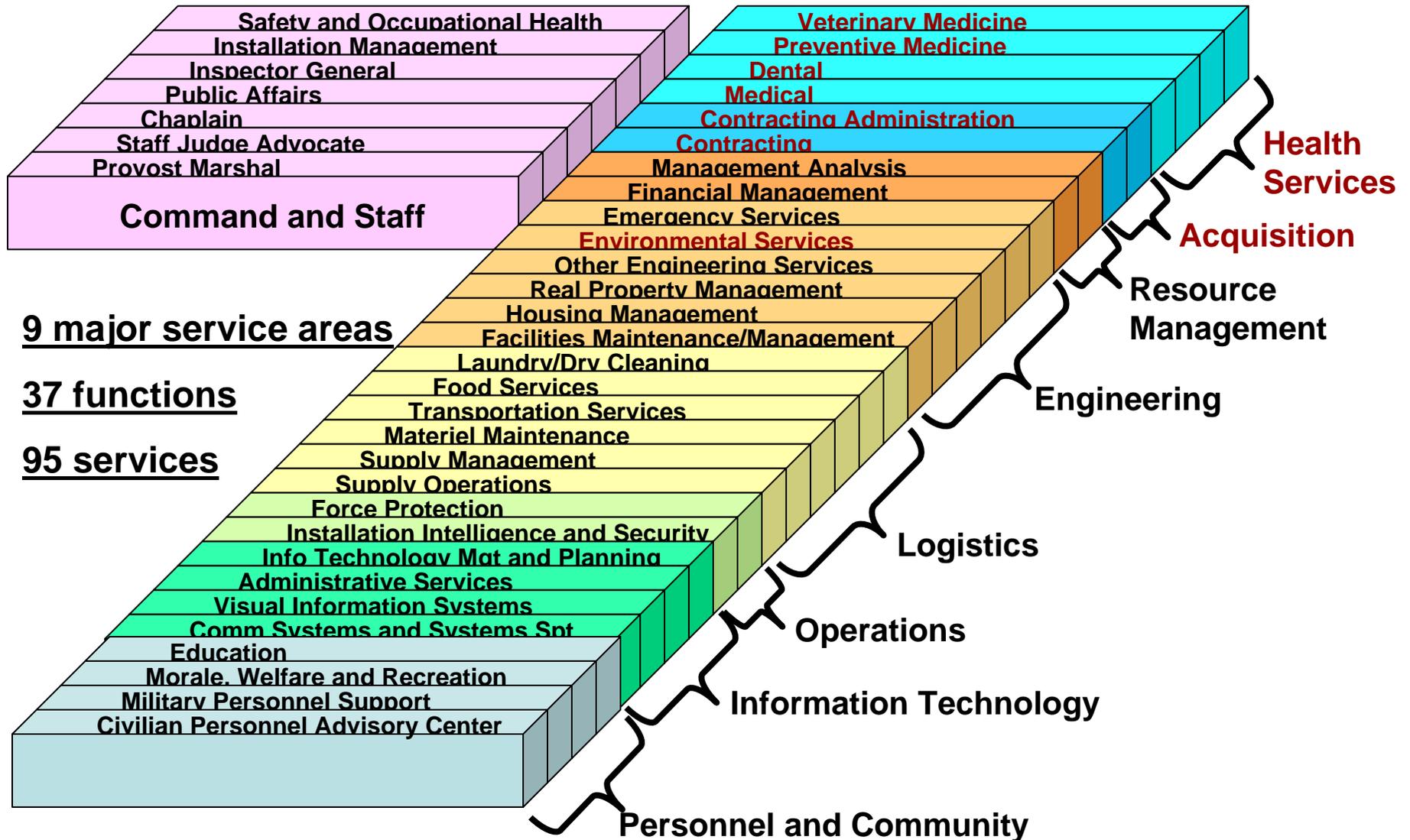
- Build Requirements Based on Performance Standards to Ensure:
  - ✓ Soldiers & Families get Quality Support
  - ✓ Consistent, Standard Support Across all Installations
  - ✓ Enable Well Being and Readiness
- Better Define, Develop, Justify & Defend Requirements by Service
- Articulate Impact of Funding Shortfalls

## - Functional Proponents Involvement:

- Establish Accurate Performance Standards that Reflect Army Needs
- Monitor Installation Performance / Review Standards and Metrics
- Feedback & Support Through Annual After Action Reviews

# Service Based Costing [SBC]

## *What Installations Do*



# History of Service Structure Development

- **Financial Accounting Records were Structured by Letter Account**  
(Input Based, Non-Descriptive, Not Tied to Output)
- **DASA-CES Partnered with ACSIM to Develop a Performance Based Costing Methodology**  
“What Do Base Operations (Installations) Produce for Soldiers, Families, and Units?”
- **DASA-CES conducted the following efforts which took 2 ½ Years to Agree on Taxonomy of Services**
  - ✓ 1994 - FORSCOM Field Operational Assessment Defined 122 Services
  - ✓ 1995 - AMC Baseline Service Study Increased to 132 Services
  - ✓ 1995 - HQDA Service Proponents & MACOMS Finalized on 95 Services
- **Began Collecting Historical Cost and Output (e.g. # of Meals) Through Service Based Costing Across the Army in FY96**
- **Revised the Financial Accounting Structure (AMSCOs) to Align with the Services Beginning in FY99 ( Provided Automated Top Loading of Financial Data)**
- **DAS / ACSIM Established a HQDA Army Baseline Standards Task Force in FY02**

# SSC Cost Methodology

## *Using Pacing Measures (Drivers) to Predict Outcome*

Drivers Can be Used to Predict 100% of an Outcome but Don't Explain All That is Done

Goal is to Use Drivers that Provide the Most Accuracy, 100% is Rarely Achieved



### Outcome

Win or Lose Game

### Driver

Total Offensive Yards per Game

### Performance Standards

- 150 Rushing Yds/ Game
- 2:1 Turnover Ratio
- 75% Field Goal Percentage



### Outcome

Total Operating Cost

### Driver

# of Rooms Available & % Occupancy Rate

### Performance Standards

- Rooms Turned Over within 2 Hrs after Check Out IAW Hotel Checklist Criteria
- 30 Min Response to Calls
- 10 Min Check In & Out

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# BASOPS Requirements Generation Process

## Standard Service Costing (SSC) Concept

Installation Status Report  
(ISR) - Services



Builds Installation  
Baseline Service  
Requirement

Results:

- Performance
- Cost



Measures Historical  
Cost and Output



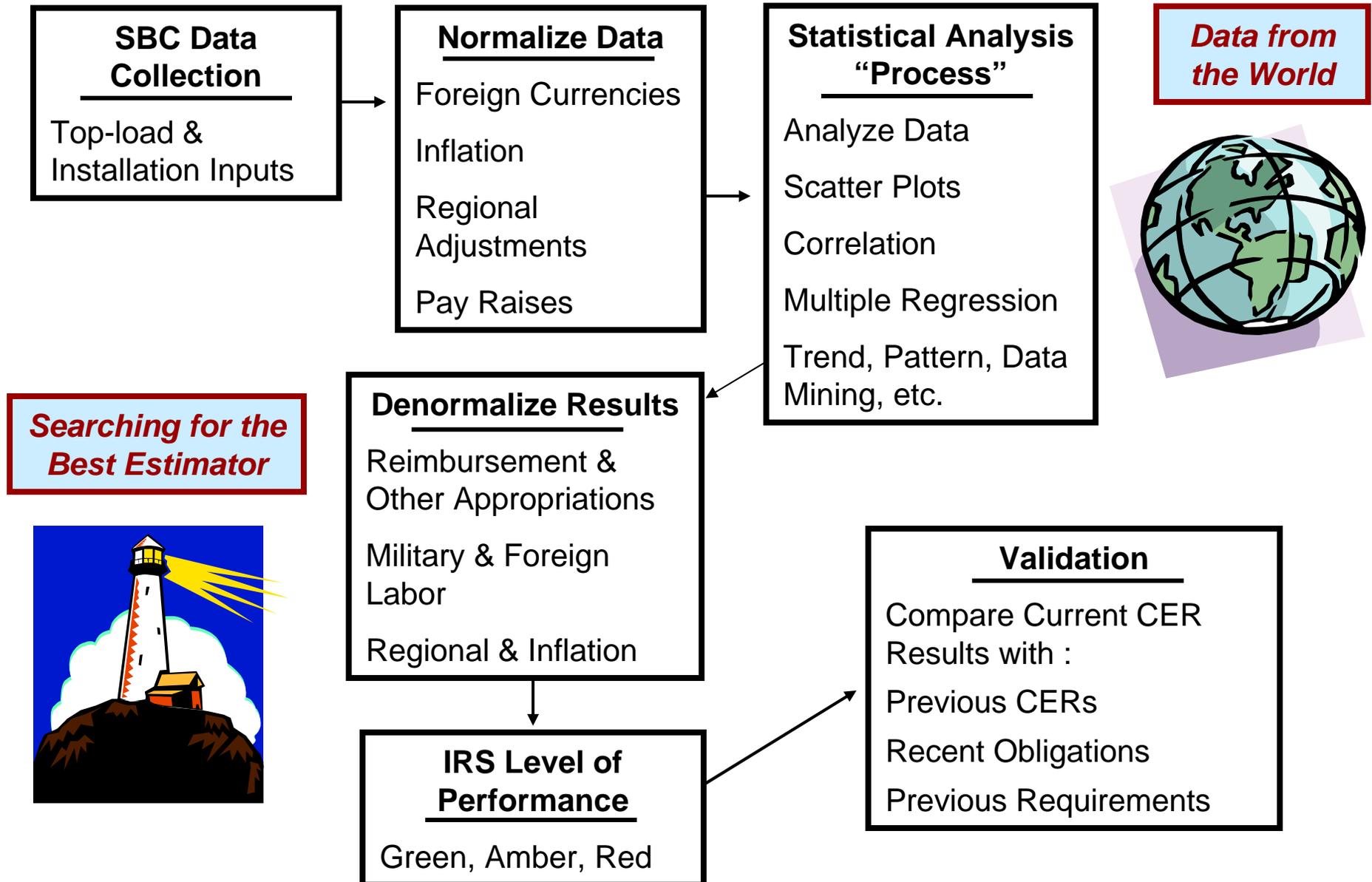
+

HQDA  
Approved  
Adjustments

Cost of Service at Performance  
Standard

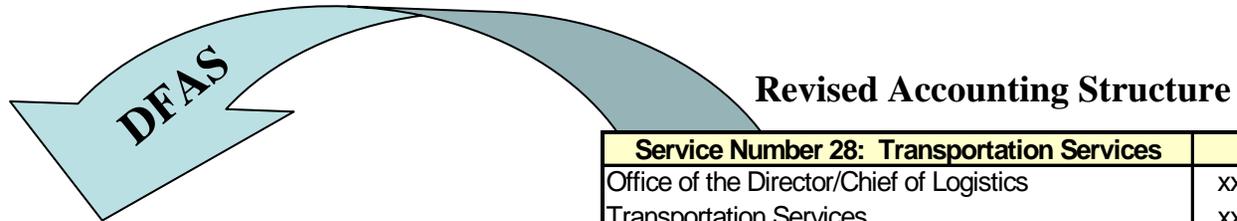
- Parametric Approach based on Pacing Measures (Cost Drivers)
- Predicts Full Service Cost

# Standard Service Costing (SSC) Process



# Measurement of Full Cost & Performance

## *Historical Cost & Output* [SBC]



### • Full Cost

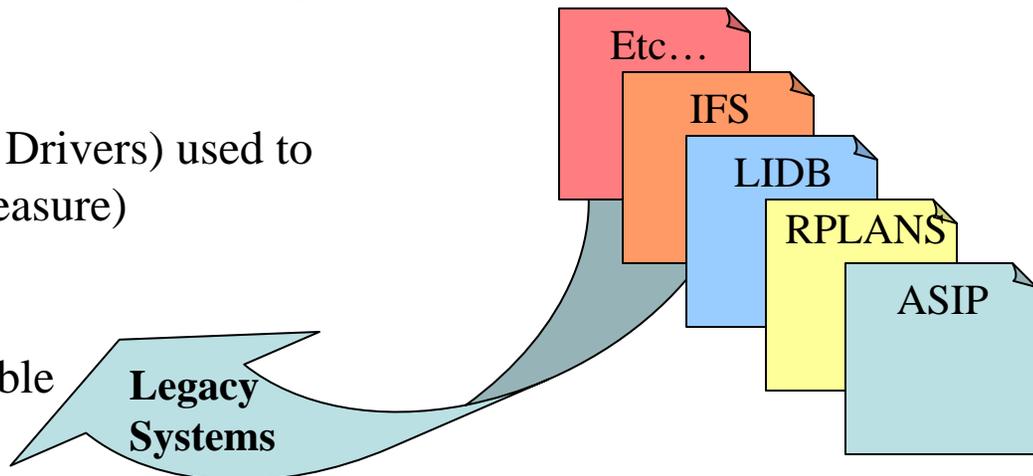


- OMA (Direct & Reimbursement)
- Military Labor (TDA, BMMP)
- NAF / APF Shortfalls
- Foreign National Labor
- Other Appropriations (DHP, AWCF, ..)

Service Number 28: Transportation Services	AMSCO	
Office of the Director/Chief of Logistics	xxxx96	.BD
Transportation Services	xxxx96	.DO
Non-GSA Transportation Motor Services	xxxx96	.DA
Installation Transportation Office Operations	xxxx96	.DB
GSA-Owned and Leased Transportation	xxxx96	.DC
Movement of Privately-Owned Personal Property	xxxx96	.DD
Supply Operations and Management	xxxx96	.BO

### • Output

- Pacing Measures (Cost Drivers) used to Gauge Cost (Units of Measure)
  - ✓ # of Vehicles
  - ✓ # of Meals
  - ✓ Population Eligible



# Service Based Costing (SBC) Provides Historical Cost and Output

<b>BY SERVICE</b>	<b>BY INSTALLATION</b>	
	<b>CIVILIAN MANPOWER DATA</b>	APF FTEs
		NAF FTEs
	<b>ELEMENTS OF COST DATA</b>	\$ Civilian Labor
		\$ Equipment
		\$ Materials
		\$ Contracts
		\$ Travel
		\$ Other
		\$ Depreciation
	<b>MILITARY MANPOWER DATA</b>	Military FTEs
	<b>PACING MEASURES VALUES</b>	Primary (PPM) Quantity
		Secondary (SPM) Quantity
		Tertiary (TPM) Quantity
	<b>DEMOGRAPHIC DATA</b>	IMA Region
		MACOM
		CONUS / OCONUS
		Carrier Appropriation (Funding Type)
		Civilian Employees
		Military
Full Time Contractors		
Total Workforce		
Acres of Improved Grounds		
Acres of Unimproved Grounds		
Total Acres		
Lane Miles of Surfaced Roads		
Building KSF		
AFH Units		
Billet Spaces		

# Installation Service Level Performance *Performance Standards*



## Food Services Example

### Installation Status Report (ISR) - Services

Performance Measure Description (Metric)	Green (Standard)	Amber (Standard)	Red (Standard)
Number of meals per week	21 down to 19	19 down to 16	Less than 16
Average annual food safety and protection score	100% down to 90%	Less than 90% down to 80%	Less than 80%
Percentage of meal card holders using the dining facilities	100% down to 65%	Less than 65% down to 50%	Less than 50%
Operating Costs/Food Costs	0.3% or less	More than 0.3% up to 0.4%	More than 0.4%

- Performance measures at Green, Amber, Red Standards

# SBC Data *Normalization*

	<i>Inflation</i>	<i>Regional Adjustments</i>	<i>Pay Raise</i>	<i>Foreign Currency</i>
<b>Convert From</b>	Non-pay Current Yr \$	Local Pay - Regional Construction Rate	Civilian Pay \$	Local Currency
<b>Convert To</b>	Constant Yr \$	Standard Rate - National Standard	Base Yr Pay \$	U.S. Base Yr \$
<b>Using</b>	OSD Inflation Rates	Locality Pay Rate - Regional Construction Index	Civilian Pay Raise Adjustment	Budget Exchange Rates

Normalization is necessary prior to analysis in order to remove regional anomalies and give each dollar the same buying power for a particular base year. Specifically, SBC Costs are adjusted for the following four factors:

- Inflation
- Regional Adjustments – Locality Pay and Regional Construction
- Pay Raise
- Foreign Currency Budget Exchange Rate



# Full Cost and Performance Data

## Food Services



FY	Region	Installation	Service Total	# of Meals	Enlisted	Milpop	Barracks	CRating
2001	SOUTHEAST	Fort Benning	\$17,851,559	10,201,660	24,416	27,370	17,423	C-3
2002	SOUTHEAST	Fort Benning	\$19,859,021	10,180,766	24,617	27,249	17,124	C-2
2002	SOUTHEAST	Fort Jackson	\$12,504,702	9,769,192	23,605	25,365	17,279	C-4
2001	SOUTHEAST	Fort Jackson	\$12,641,811	9,494,427	21,489	23,210	18,577	C-4
2003	SOUTHEAST	Fort Jackson	\$18,640,057	9,463,589	23,363	25,175	17,809	C-4
2003	SOUTHEAST	Fort Benning	\$27,726,964	9,213,430	24,454	27,330	17,580	C-1
2003	NORTHWEST	Fort Leonard Wood	\$20,312,057	9,013,330	22,719	25,056	16,068	C-4
2001	NORTHWEST	Fort Leonard Wood	\$11,347,071	8,697,189	18,445	20,667	15,389	C-4
2002	NORTHWEST	Fort Leonard Wood	\$15,200,148	8,353,232	21,170	23,466	17,002	C-4
2002	KOREA	Area I Support Activity	\$8,163,180	6,585,677	16,847	18,570	29,531	C-1
2003	SOUTHEAST	Fort Knox	\$16,002,891	5,985,808	15,001	17,008	13,974	C-1
2002	SOUTHEAST	Fort Knox	\$10,188,233	5,213,695	14,801	16,803	13,510	C-2
2002	SOUTHWEST	Fort Sill	\$7,276,556	5,100,262	17,319	19,931	10,631	N/A
2001	SOUTHWEST	Fort Sill	\$7,270,913	5,008,486	17,100	19,415	10,916	N/A
2003	KOREA	Area I Support Activity	\$8,158,646	4,980,759	16,691	18,345	28,187	C-1
2002	SOUTHEAST	Fort Bragg	\$11,313,535	4,553,731	37,886	44,361	19,939	C-1
2001	SOUTHEAST	Fort Knox	\$9,980,325	4,506,503	13,626	15,545	14,289	C-2
2003	SOUTHEAST	Fort Bragg	\$10,971,137	4,380,636	38,120	44,552	20,155	C-1
2003	SOUTHWEST	Fort Sill	\$10,101,093	4,336,782	17,153	20,111	10,956	N/A
2001	SOUTHEAST	Fort Bragg	\$11,243,927	4,254,089	38,109	44,591	19,577	C-1
2002	NORTHEAST	Fort Lee	\$5,848,704	3,481,980	8,193	10,368	4,677	C-4
2003	NORTHWEST	Fort Lewis	\$5,154,050	3,176,391	19,731	23,238	16,205	C-4
2002	SOUTHWEST	Fort Hood	\$7,206,812	2,876,344	37,338	42,721	19,040	C-1
2001	NORTHEAST	Fort Lee	\$5,168,010	2,787,772	7,529	9,393	4,431	C-4
2003	SOUTHWEST	Fort Hood	\$6,844,703	2,757,140	36,880	42,158	18,988	C-1
2001	SOUTHWEST	Fort Hood	\$1,343,316	2,629,727	37,823	43,183	19,080	N/A
2002	NORTHWEST	Fort Lewis	\$6,635,531	2,615,436	18,828	22,272	124,269	C-3
2003	NORTHEAST	Fort Lee	\$7,285,651	2,476,862	7,809	9,957	4,677	C-4
2001	NORTHWEST	Fort Lewis	\$5,306,215	2,454,128	18,299	21,701	14,770	C-4
2003	SOUTHWEST	Fort Sam Houston	\$6,460,003	2,335,948	12,301	16,206	6,738	C-1

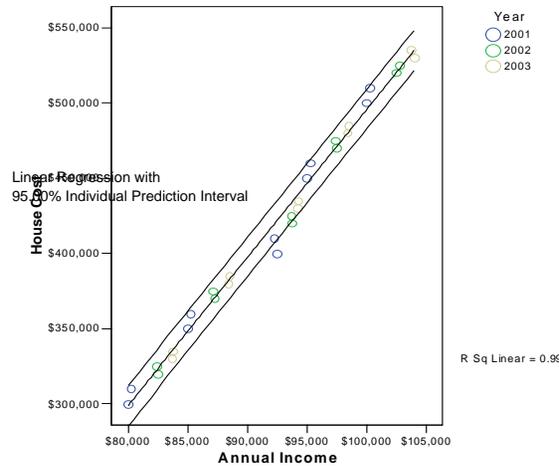
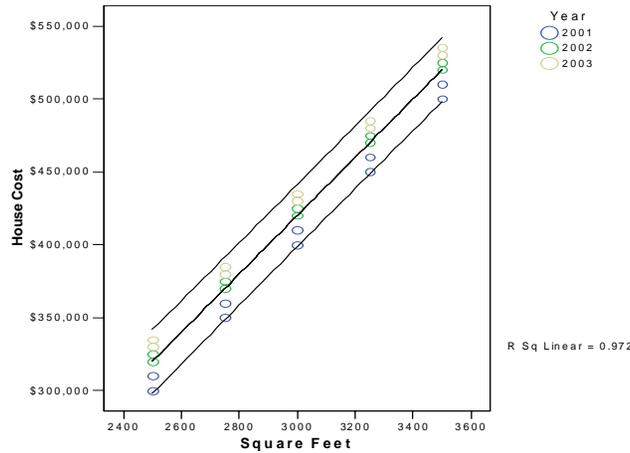
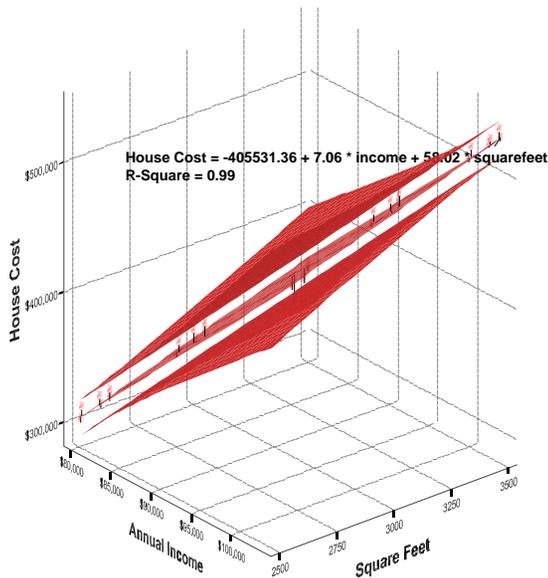
## Statistical Analysis

Analyze Data

Scatter Plots

Primary Statistical Method is Regression however may use other widely accepted statistical methods as pertinent

E.g. Regression Model versus Model of the Mean --- Best Predictor



Which method (CER or 3 year average) does a better job predicting total service cost for each installation.

Subtract each installation's predicted cost from the actual reported cost and square and sum [Sum of Squares Errors (SS)]

Calculate the Mean Squared Error (MSE) by dividing by the number of installations.

To convert back to dollars we take the square root of the MSE equaling the Root Mean Squared Error (RMSE).

Compare the CER estimate of the RMSE prediction from the 3 yr Avg and choose the smallest RMSE Prediction

House	Year	Cost	Square Feet	Income
1	2001	\$300,000	2500	\$80,000
1	2002	\$320,000	2500	\$82,500
1	2003	\$335,000	2500	\$83,750
2	2001	\$350,000	2750	\$85,000
2	2002	\$370,000	2750	\$87,250
2	2003	\$385,000	2750	\$88,500
3	2001	\$400,000	3000	\$92,500
3	2002	\$420,000	3000	\$93,750
3	2003	\$435,000	3000	\$94,250
4	2001	\$450,000	3250	\$95,000
4	2002	\$470,000	3250	\$97,500
4	2003	\$485,000	3250	\$98,500
5	2001	\$500,000	3500	\$100,000
5	2002	\$520,000	3500	\$102,500
5	2003	\$535,000	3500	\$103,750
6	2001	\$310,000	2500	\$80,250
6	2002	\$325,000	2500	\$82,400
6	2003	\$330,000	2500	\$83,700
7	2001	\$360,000	2750	\$85,250
7	2002	\$375,000	2750	\$87,100
7	2003	\$380,000	2750	\$88,400
8	2001	\$410,000	3000	\$92,250
8	2002	\$425,000	3000	\$93,700
8	2003	\$430,000	3000	\$94,200
9	2001	\$460,000	3250	\$95,250
9	2002	\$475,000	3250	\$97,400
9	2003	\$480,000	3250	\$98,400
10	2001	\$510,000	3500	\$100,250
10	2002	\$525,000	3500	\$102,750
10	2003	\$530,000	3500	\$104,000

$$SS_{pred} = \sum_{i=1}^N (y_i - \hat{y}_i)^2 \quad MSE_{pred} = \frac{SS_{pred}}{N}$$

$$= \sqrt{MSE_{pred}}$$



# Baseline Requirements (OMA\$) Generation Process

**Step 1:** Army “Full” Cost Equations by Service (SSC) by Installation

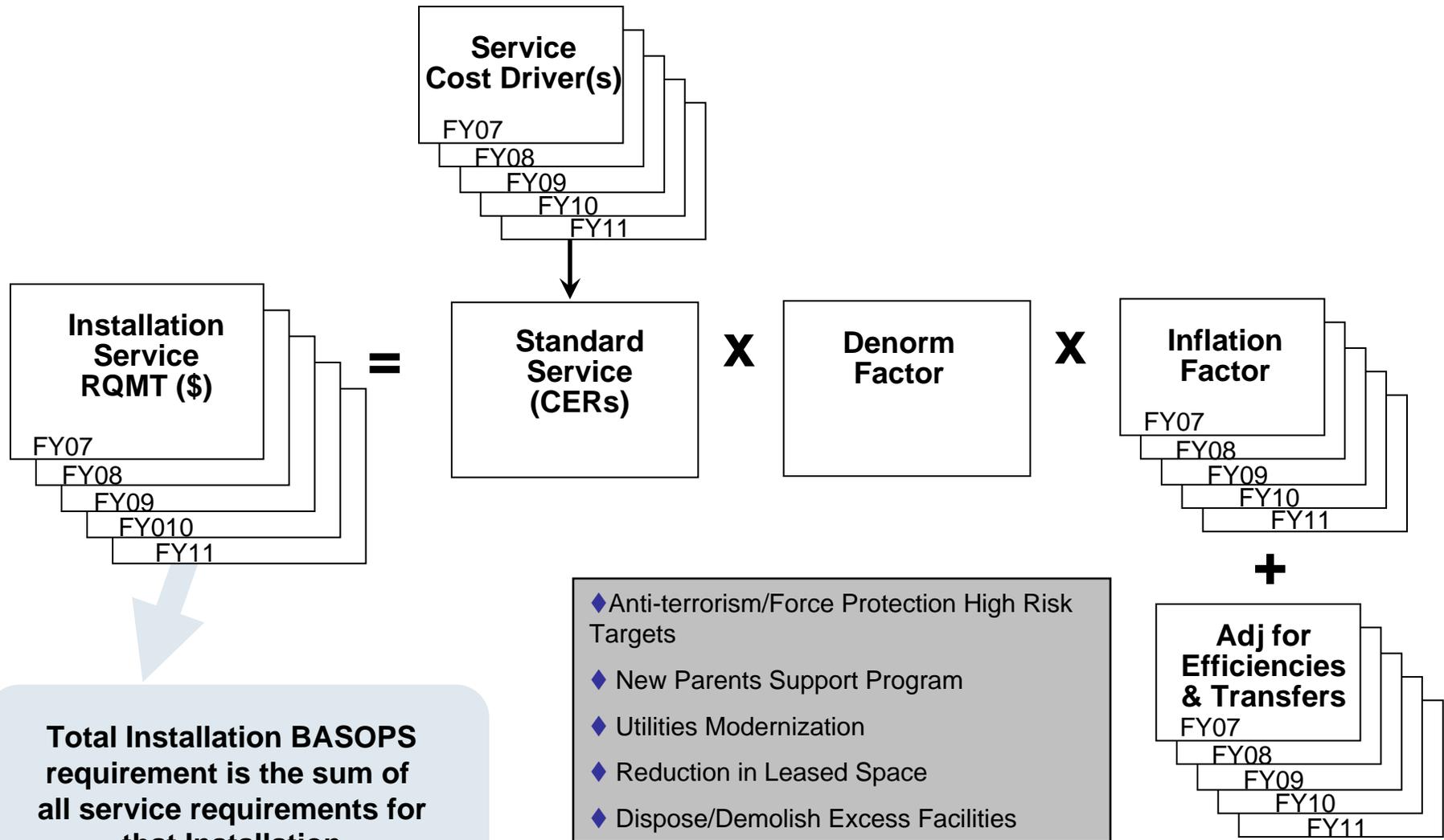
**Step 2:** Adjust for:

- ✓ Locality (Regional / Installation)
- ✓ Non OMA Labor (TDA Military, NAF, Local Nationals)
- ✓ Non OMA Funded Appropriations or \$ (DHP, AWCF, Reimbursements)
- ✓ Foreign Currency Fluctuation
- ✓ Inflation, Pay Raises

**Step 3:** Calculate Overall Army BASOPS (OMA\$) Requirement by Service by Installation

# BASOPS Requirements Development

## Using the AIM-HI SSC Model



# Requirements Generation

## *Service Level POM / Budget Output*

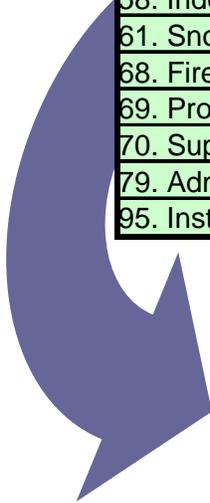
Baseline Services Requirement  
(All at Green Standard)

SERVICE
12. Fitness, Recreation and Libraries
22. Force Protection Services
23. Ammunition Supply Services
26. Asset Management
27. Materiel Support Maintenance
28. Transportation Services
29. Food Services
30. Laundry & Dry Cleaning Services
40. Maint. - Improved Grounds
41. Maint. - Unimproved Grounds (Other than Impro
44. Heating/Cooling Services
47. Electrical Services
51. Army Lodging Management
52. UPH Management
58. Indoor Pest Control
61. Snow and Sand Removal
68. Fire and Emergency Response Services
69. Program/Budget
70. Support Agreement/MOU/MOA Management
79. Administrative & Civil Law
95. Installation Safety and Occupational Health

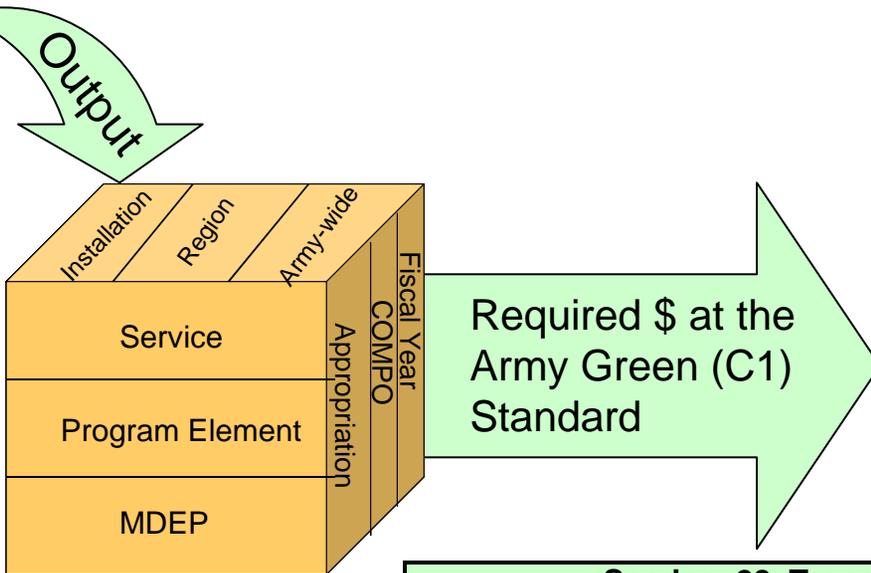
Funded at 85%  
(Service Standards Vary)

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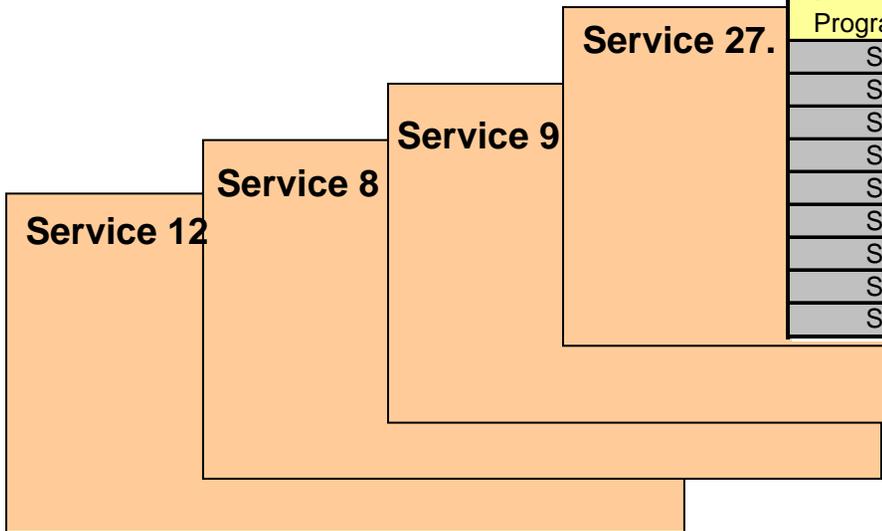
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- Defend and Justify Requirements
- Articulate Impact of Funding Shortfalls



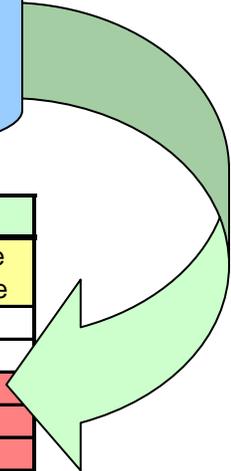
# Requirements to Funding to Common Level of Support



Service Funded at 85% of Requirement Supports SSP's 1 - 7



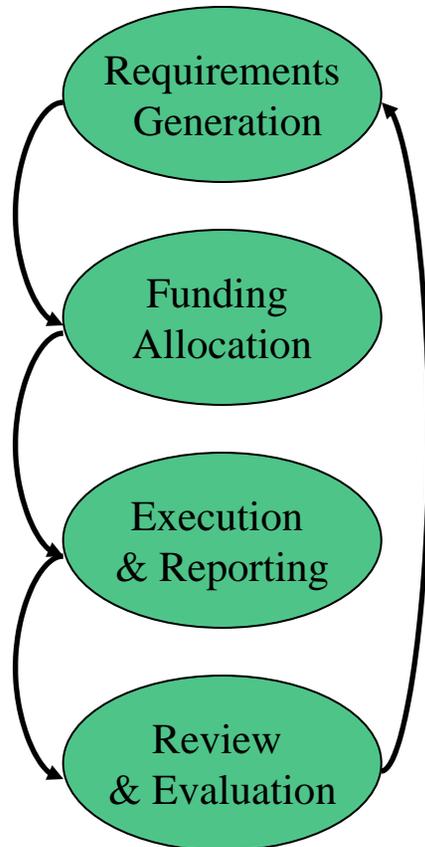
Service: 28. Transportation			
Service Support Program (SSP)	SSP Priority (Low to High)	SSP Percent of Requirement	Cumulative Percentage
SSP 9	9	10	100
SSP 8	8	5	90
SSP 7	7	10	85
SSP 6	6	10	75
SSP 5	5	15	65
SSP 4	4	15	50
SSP 3	3	5	35
SSP 2	2	10	30
SSP 1	1	20	20



# Support to Presidents Management Agenda

## Management Initiative Decisions (MID)

- **MID 901** – Establish Performance Outcomes and Track Performance Results
- **MID 910** – DoD Components Must Associate Resource Requirements to Performance Metrics (60% in FY05, 80% in FY06, and 100% in FY07 Budgets)
- **MID 913** – Requires Performance Measures to be Incorporated and Integral to Execution Review



- 80 – 90% of all Base Operations Requirements will be Generated Based on Performance Standards
- Funding to be Allocated to Installations to Achieve Common Levels of Support based on Resources Received
- Cost & Performance will be Measured by Services by Installation to Report How We Did with What We Spent
- Cost & Performance Reviews will Annually Re-evaluate to Account for New Programs, Efficiencies, and Changes in Services and/or Standards

# Agenda

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- Requirements Generation Process
  - Service Based Costing & Installation Status Report
  
  - Standard Service Costing
  
  - Base Operations Requirements
  
- **Food Services Analysis**



# Full Cost and Performance Data

## Food Services



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# Installation Service Level Performance *Performance Standards*



## Food Services Example

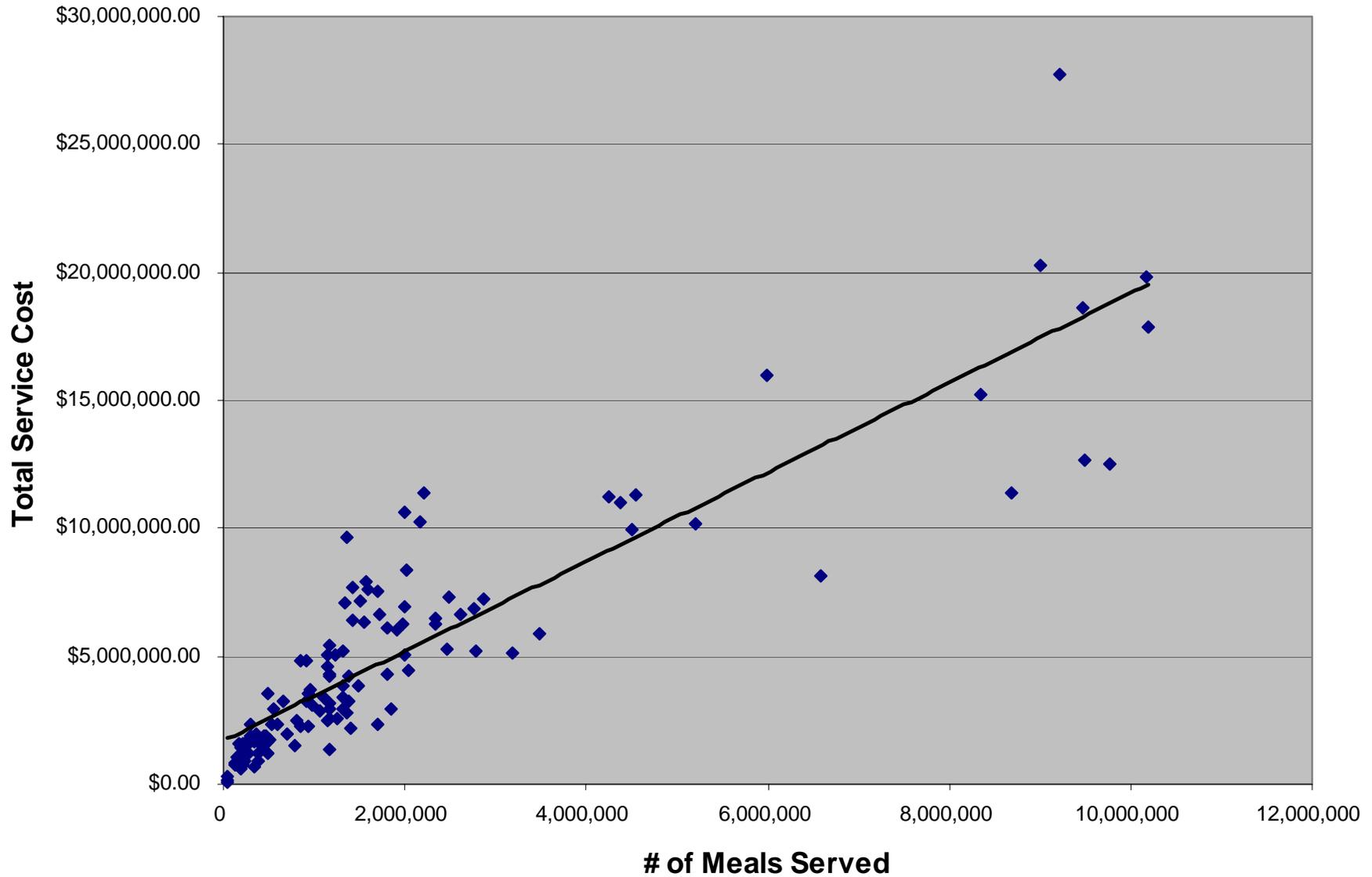
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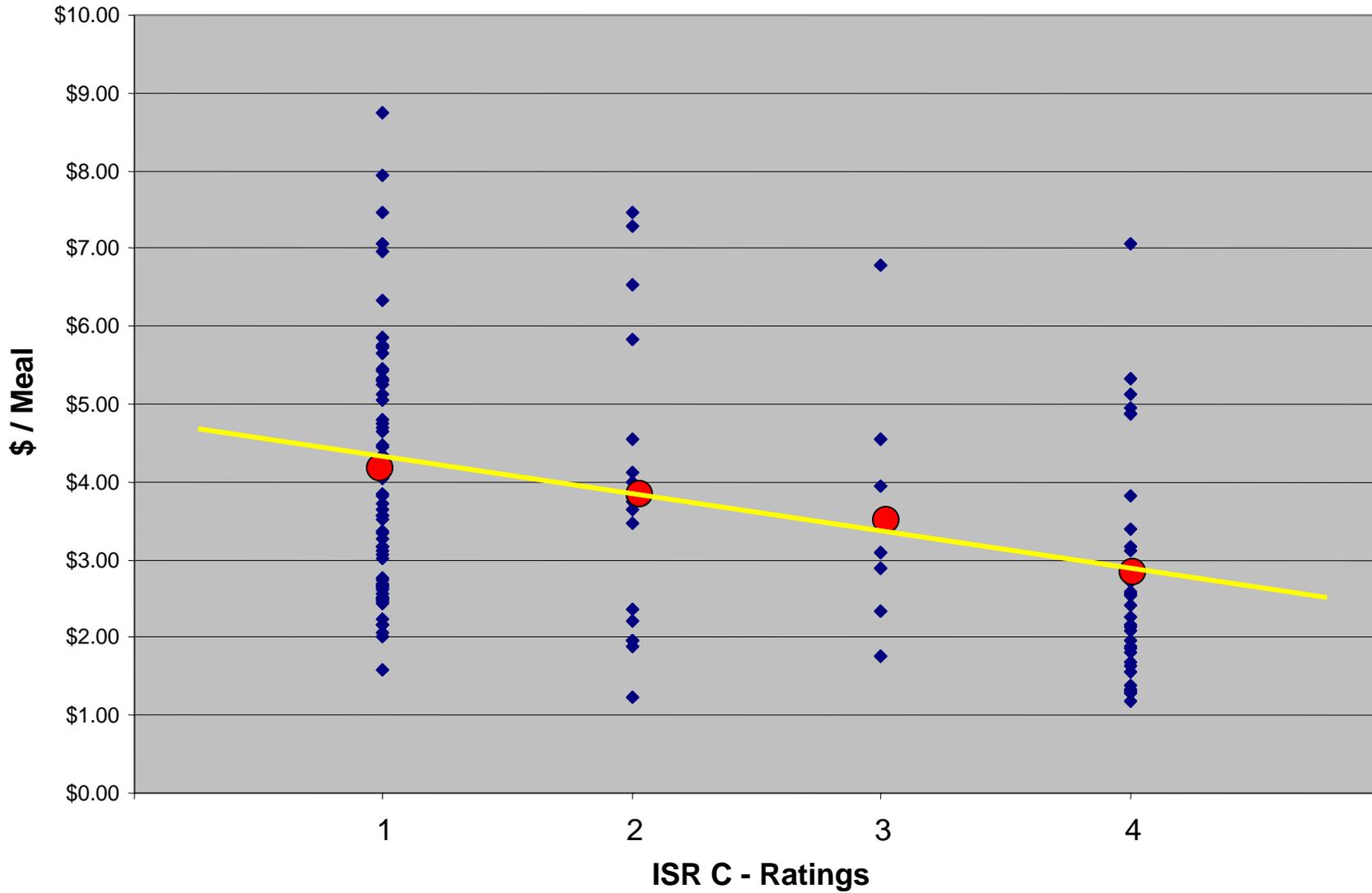
# Service Cost per Unit - Active Army Installations FY01-03

## Food Services



# Service Cost & Performance

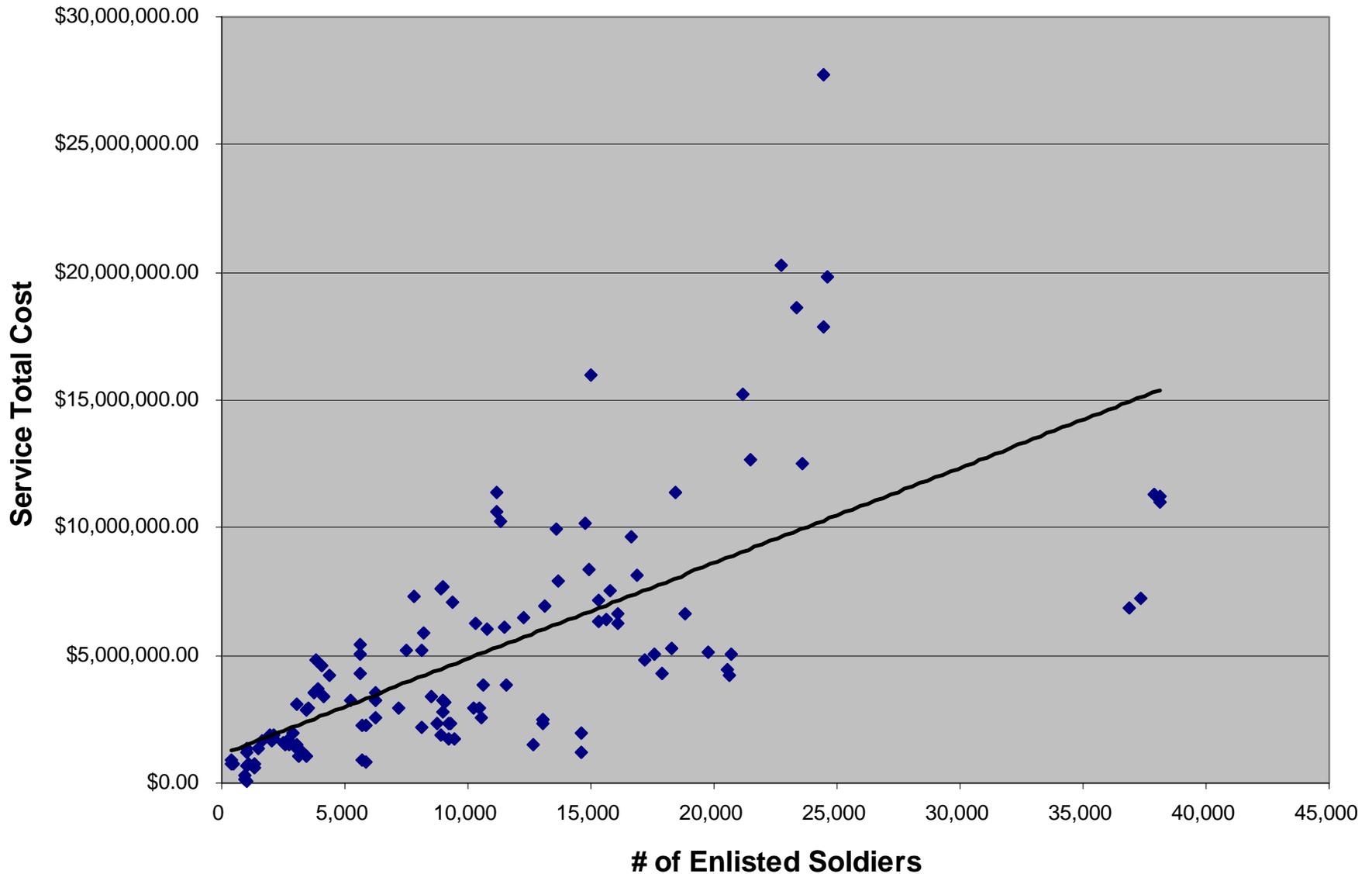
## Food Services



● Average \$ / Meal for C-Rating

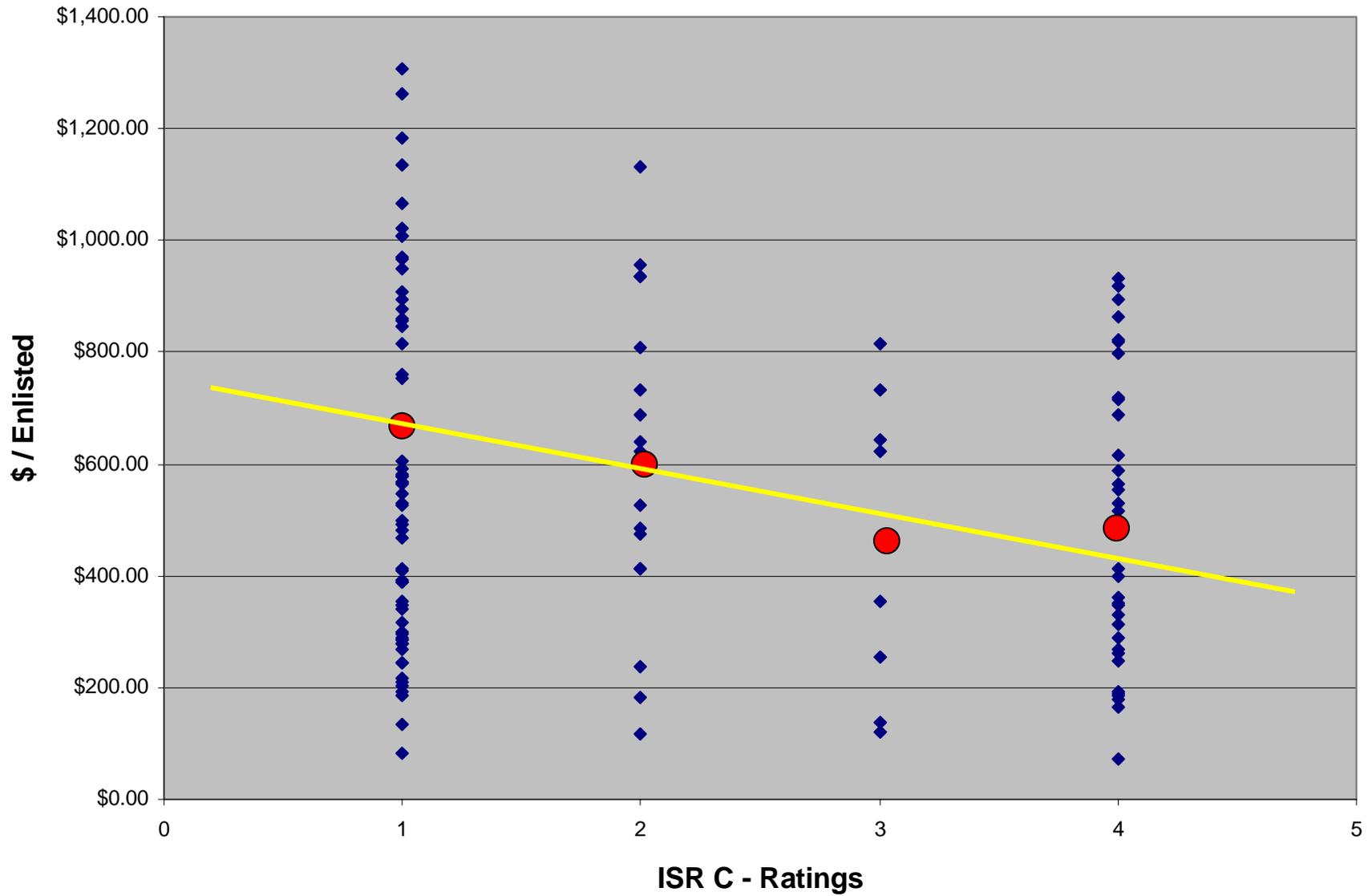
# Service Cost per Unit - Active Army Installations FY01-03

## Food Services



# Service Cost & Performance

## Food Services



● Average \$ / Enlisted Soldier for C-Rating

# SSC Cost Methodology

## Predicting Service Cost Linked to Performance Standards Food Services

### ➤ CONUS

■ Green  $Y = \$918,397 + \$1.58(X_1) + \$43.24(X_2)$

■ Amber  $Y = \$808,189 + \$1.39(X_1) + \$38.05(X_2)$

■ Red  $Y = \$707,166 + \$1.22(X_1) + \$33.29(X_2)$

### ➤ Variables (Cost Drivers)

■ Y = Total Cost; X<sub>1</sub> = # Meals Served; X<sub>2</sub> = Enlisted Population

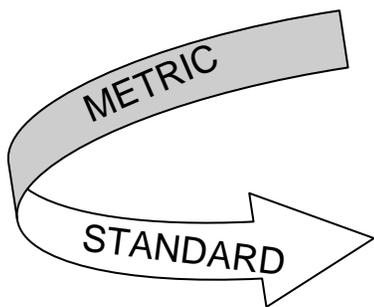
### OCONUS

$Y = \$749,405 + \$3.63(X_1)$

$Y = \$659,476 + \$3.19(X_1)$

$Y = \$577,042 + \$2.80(X_1)$

### • Performance Measures:



Performance Measure Description (Metric)	Green (Standard)
Number of meals per week	21 down to 19
Average annual food safety and protection score	100% down to 90%
Percentage of meal card holders using the dining facilities	100% down to 65%
Operating Costs/Food Costs	0.3% or less

Drives Total Cost for Service

### Statistics:

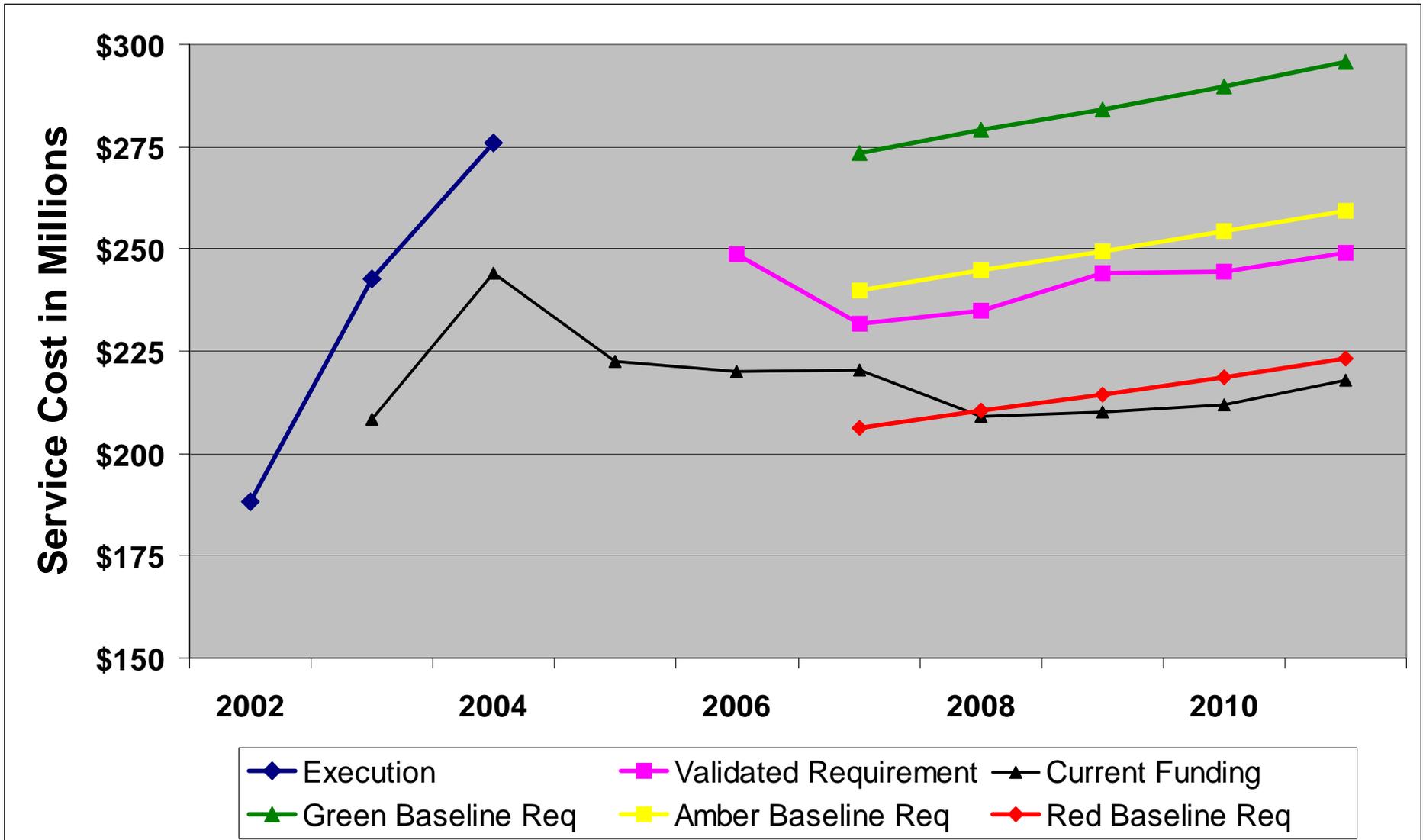
#### CONUS -

- Adjusted R<sup>2</sup> = 87%
- CoV = 46%

#### OCONUS -

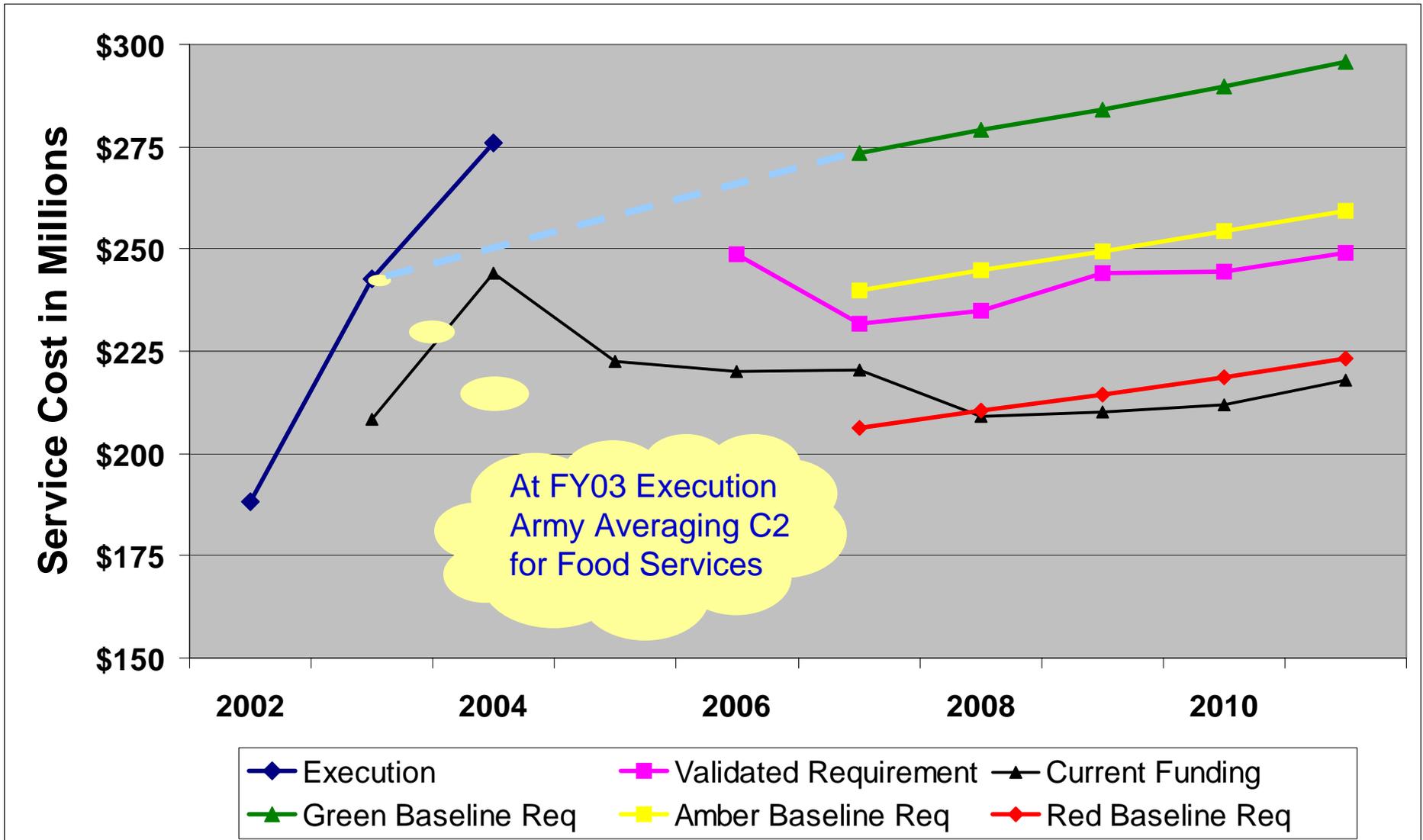
- Adjusted R<sup>2</sup> = 89%
- CoV = 22%

# Food Services POM Outlook



**Note: Execution Includes any GWOT Supplemental Spending**

# Food Services POM Outlook



**Note: Execution Includes any GWOT Supplemental Spending**