

Shipyard Work Center Performance Analysis

PERCEPTION® Helping The
Shipyard Improve Productivity

Shipyards that know their true costs are more likely to be profitable and are in a better position to challenge their competition.

They can focus their efforts and resources on those areas that can benefit the most from productive change.

A shipyard would never know this unless it had a means for measuring benefits and their relative impact upon profits.

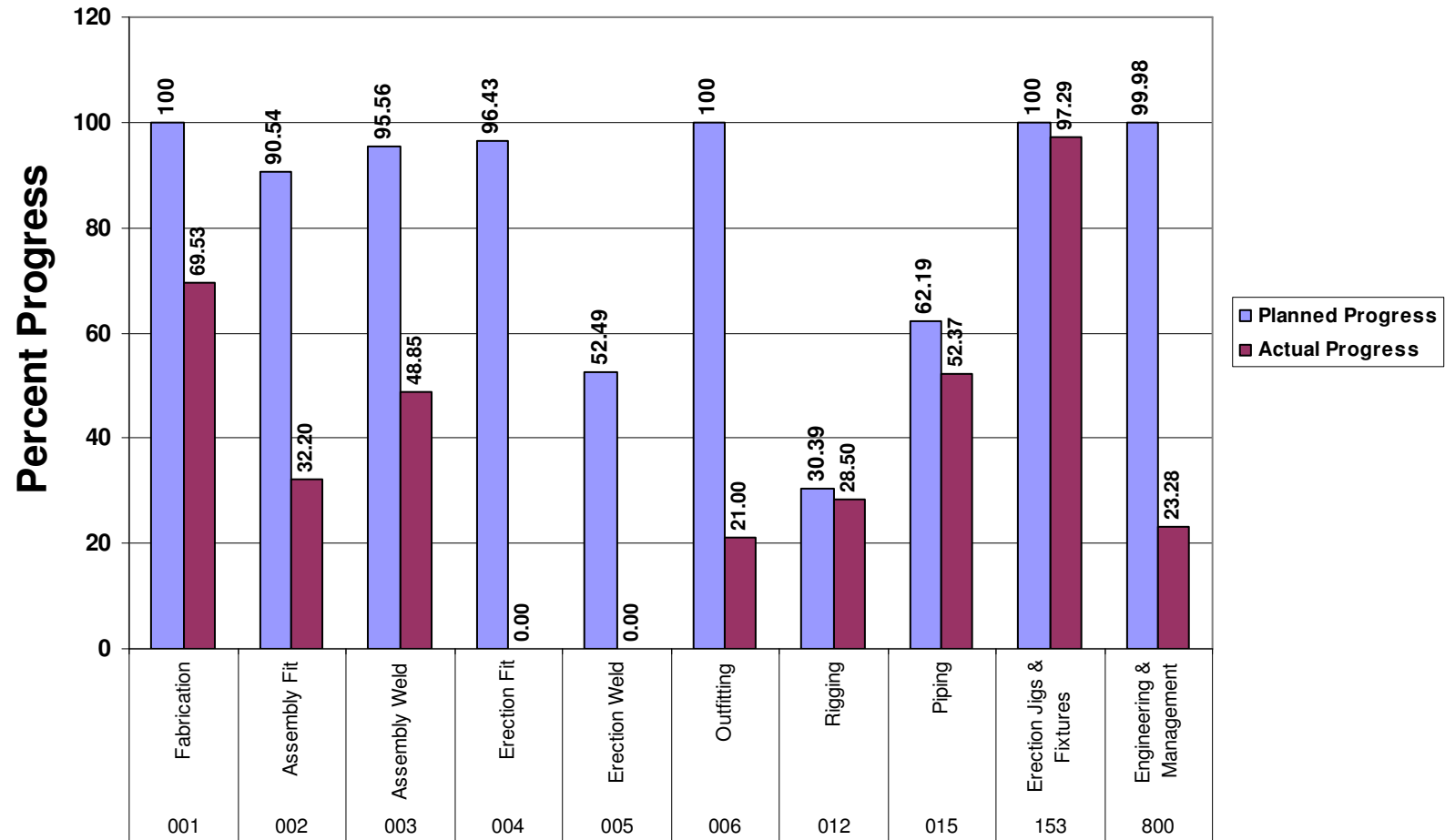
World-class shipyards have a strong focus on maximizing the efficiency of their manufacturing and assembly processes. They strive to perform work at the most productive stages of construction, eliminate wasted time, and simplify shipyard production processes.

These shipyards execute effective production plans and work hard to successfully stay on budget and on schedule. They know where they are and where they are going.

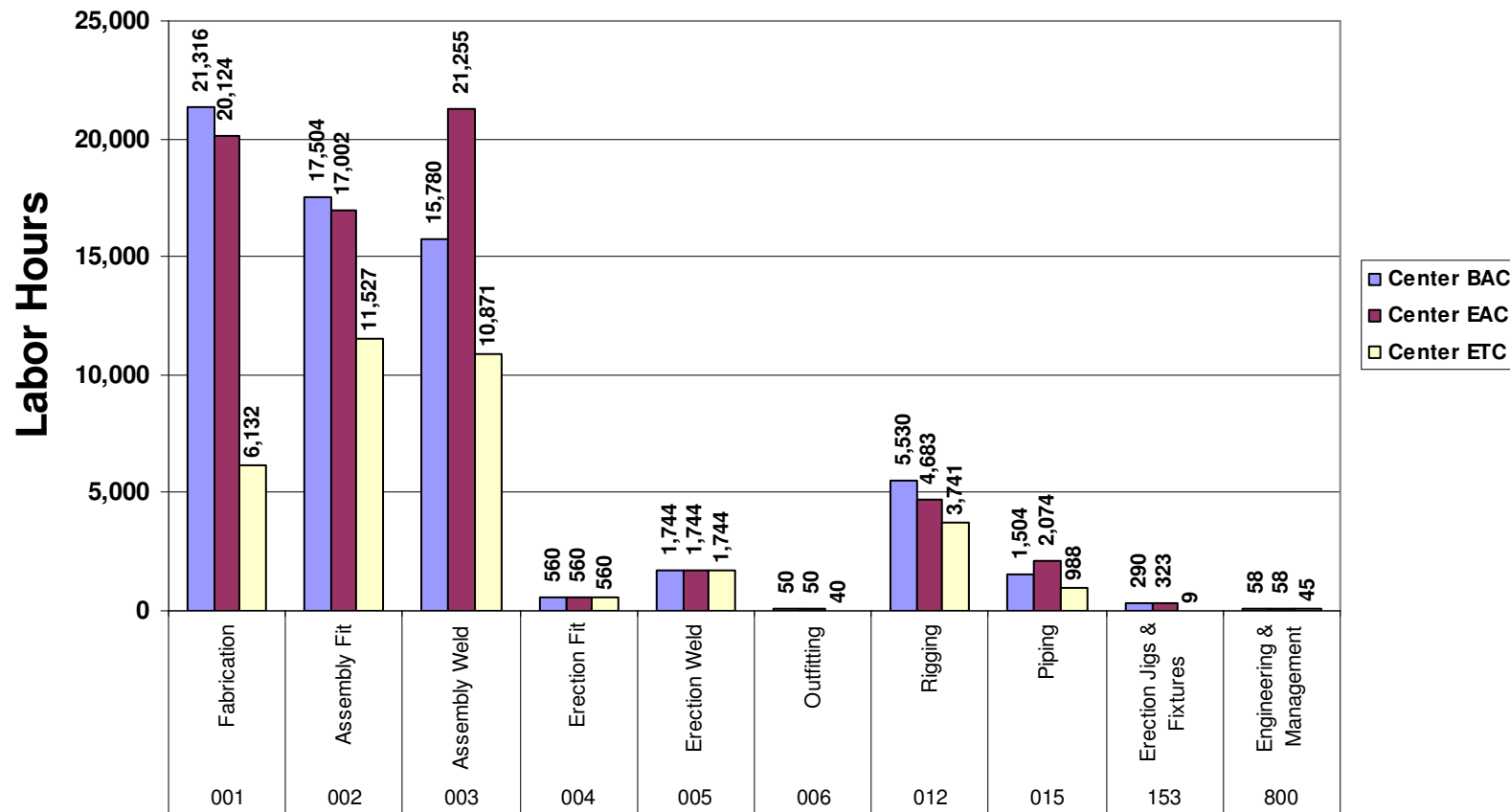
PERCEPTION compiles shipyard production information and generates concise reports on the performance of each shipyard work center.

- 1. These reports provide valuable information about the shipyard's ability to stay within budgets and schedules for each process in production.**
- 2. These reports show priorities where management should focus most of their attention towards improving productivity and profitability.**

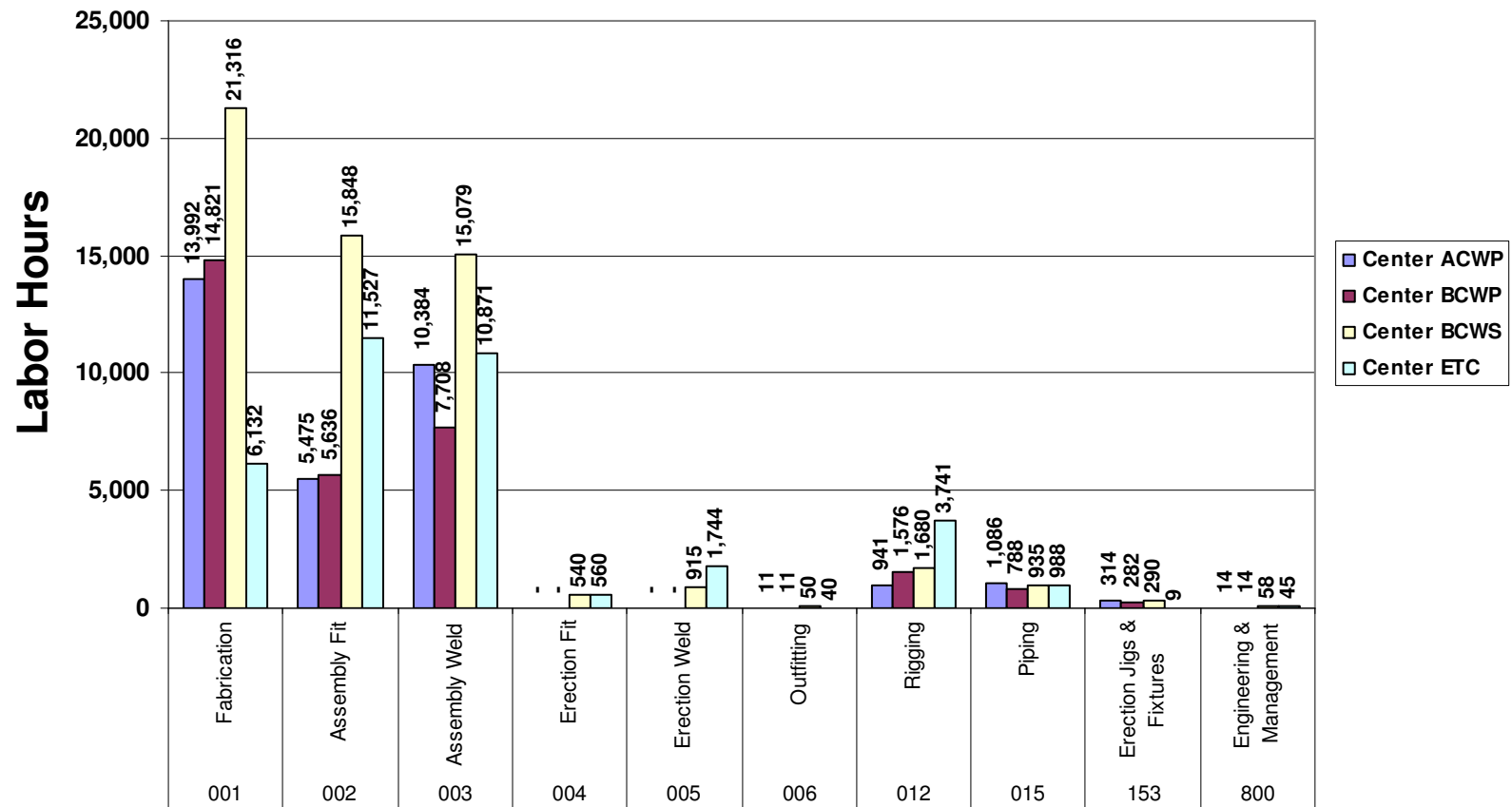
Work Center Progress



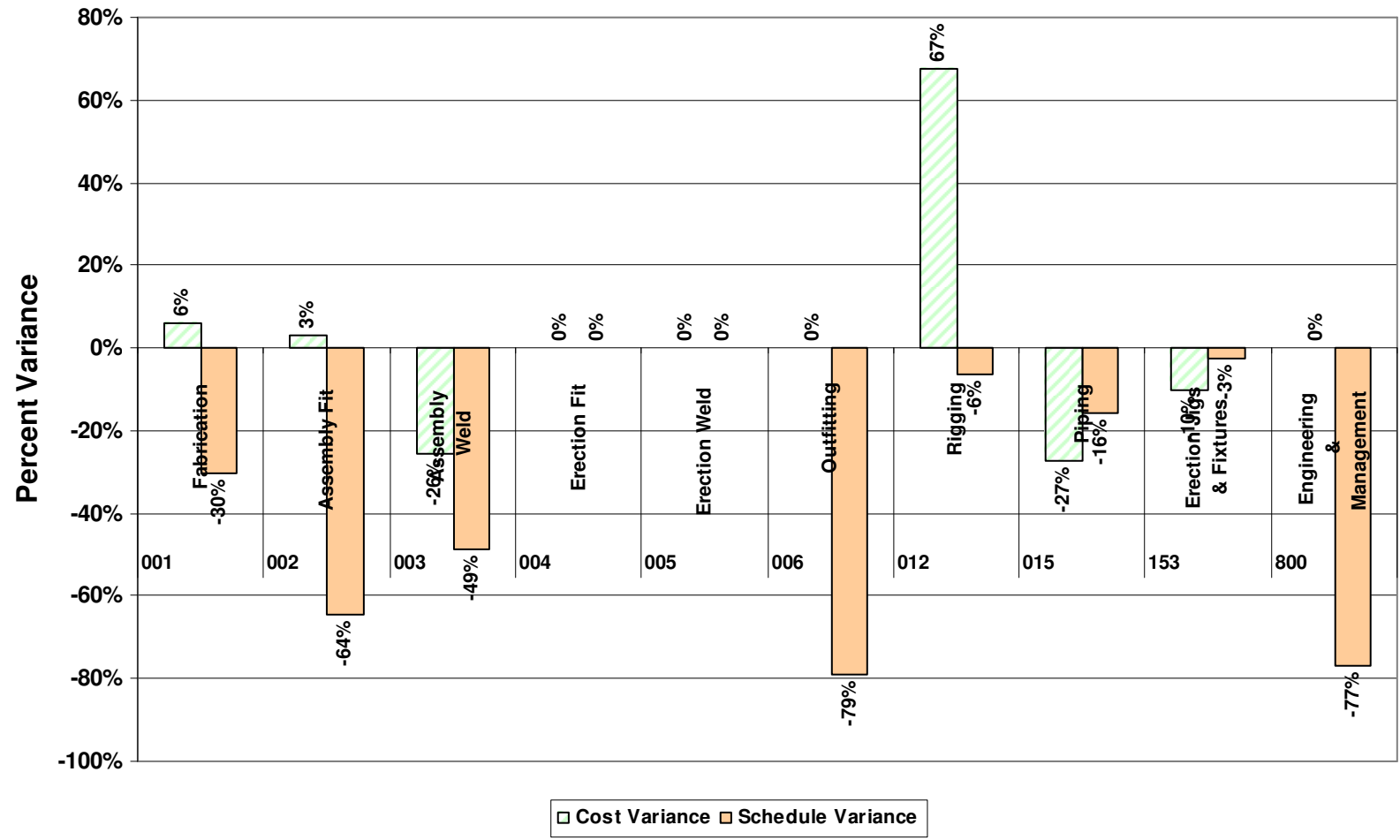
Work Center Budgets & Estimates At Completion



Work Center Actual, Earned Value, Scheduled & ETC

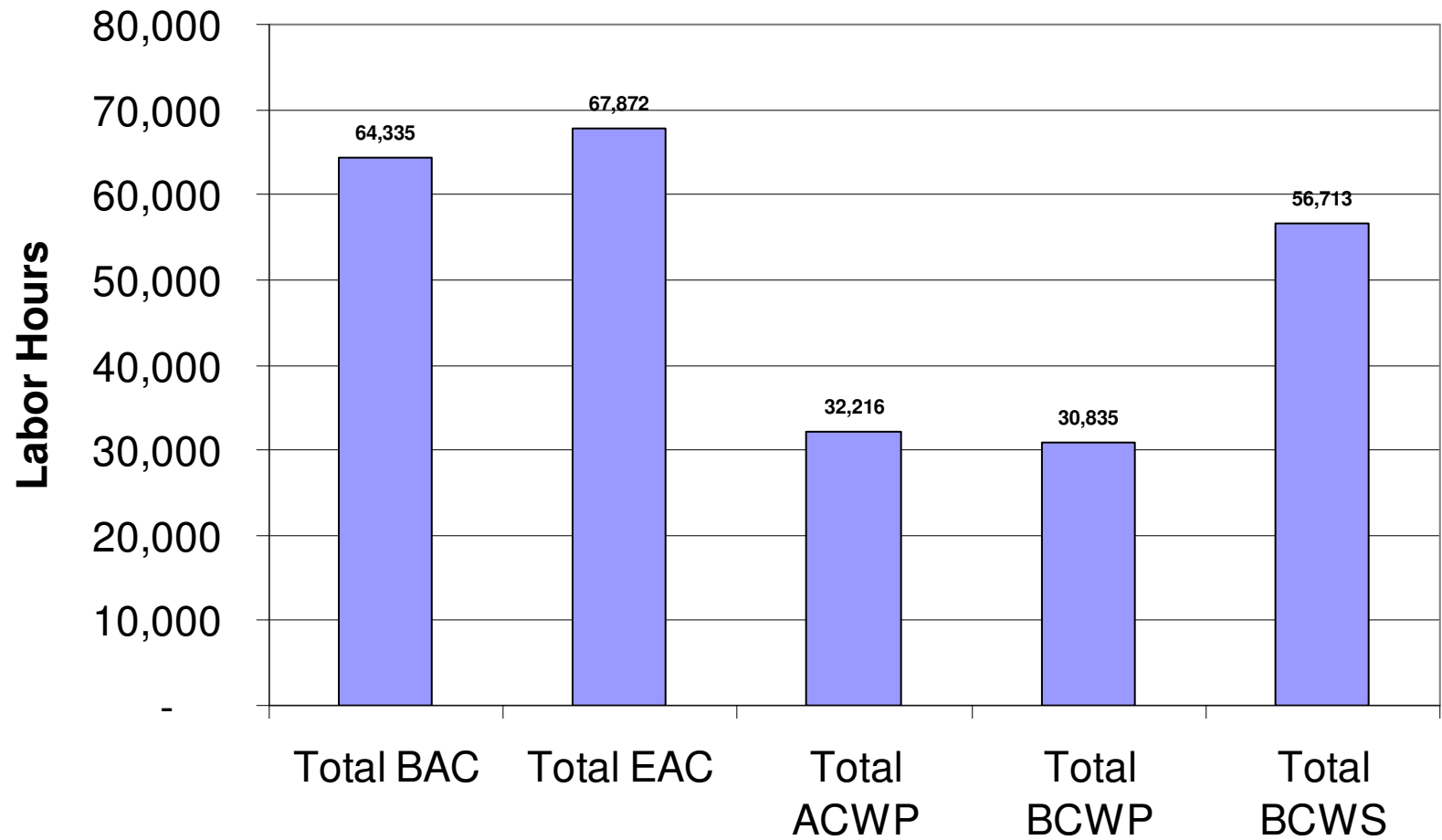


Work Center Current Cost & Schedule Variance

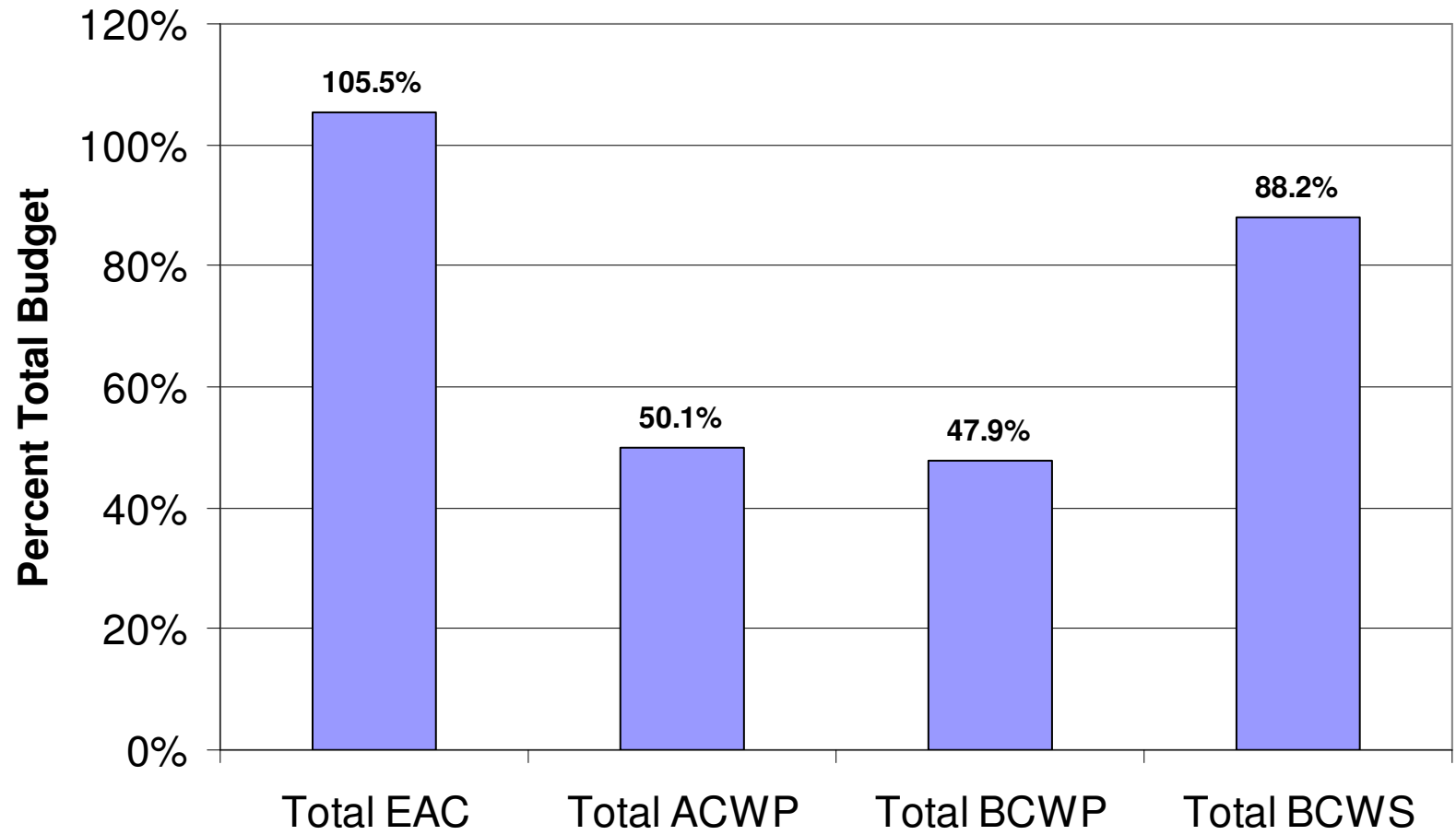


Overall Work Center Performance

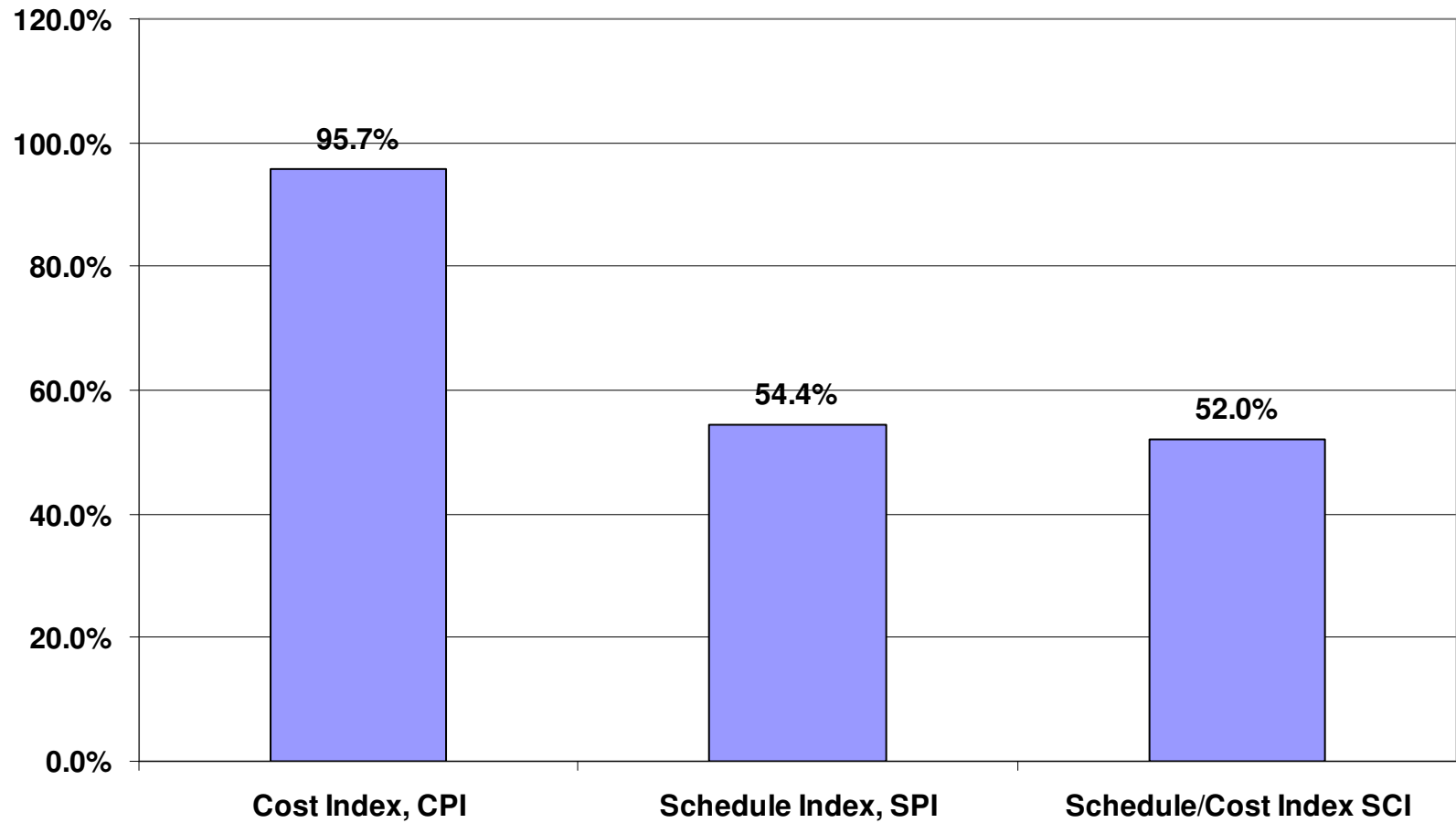
(Based on Available Work Orders)



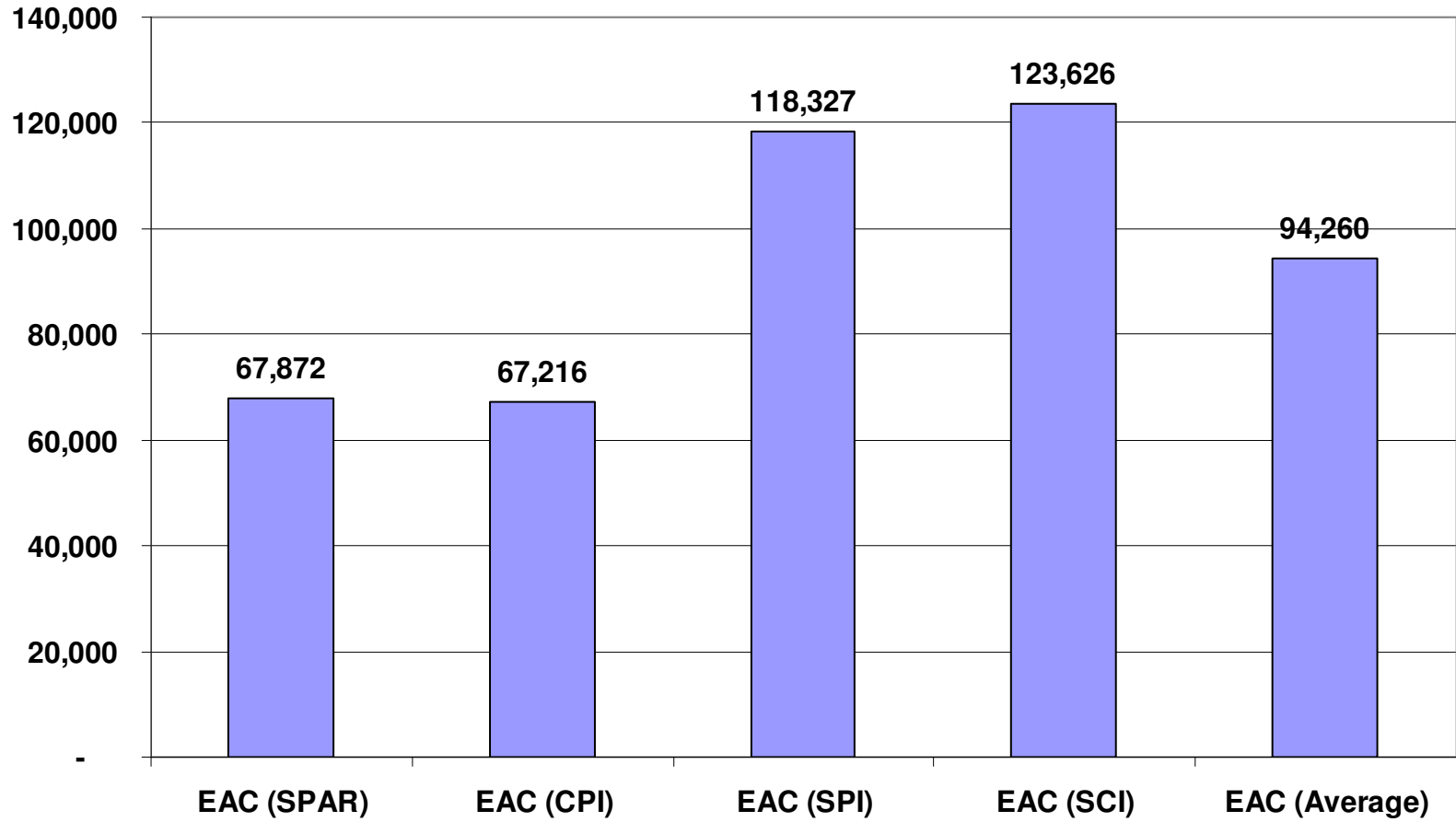
Overall Work Center Performance (Based on Available Work Orders)



Overall Work Centers Performance Indexes

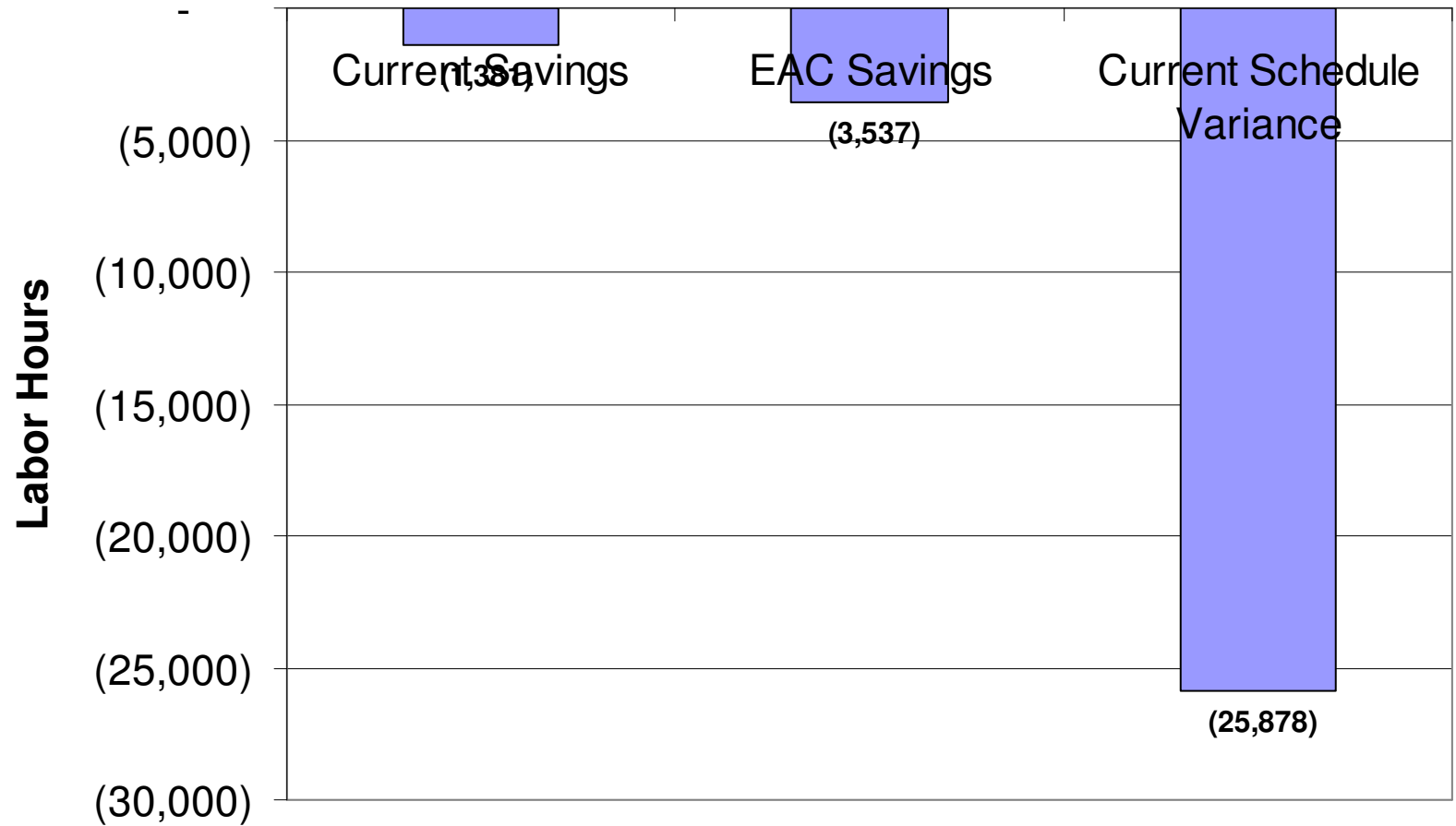


Comparing EAC Methods All Work Centers

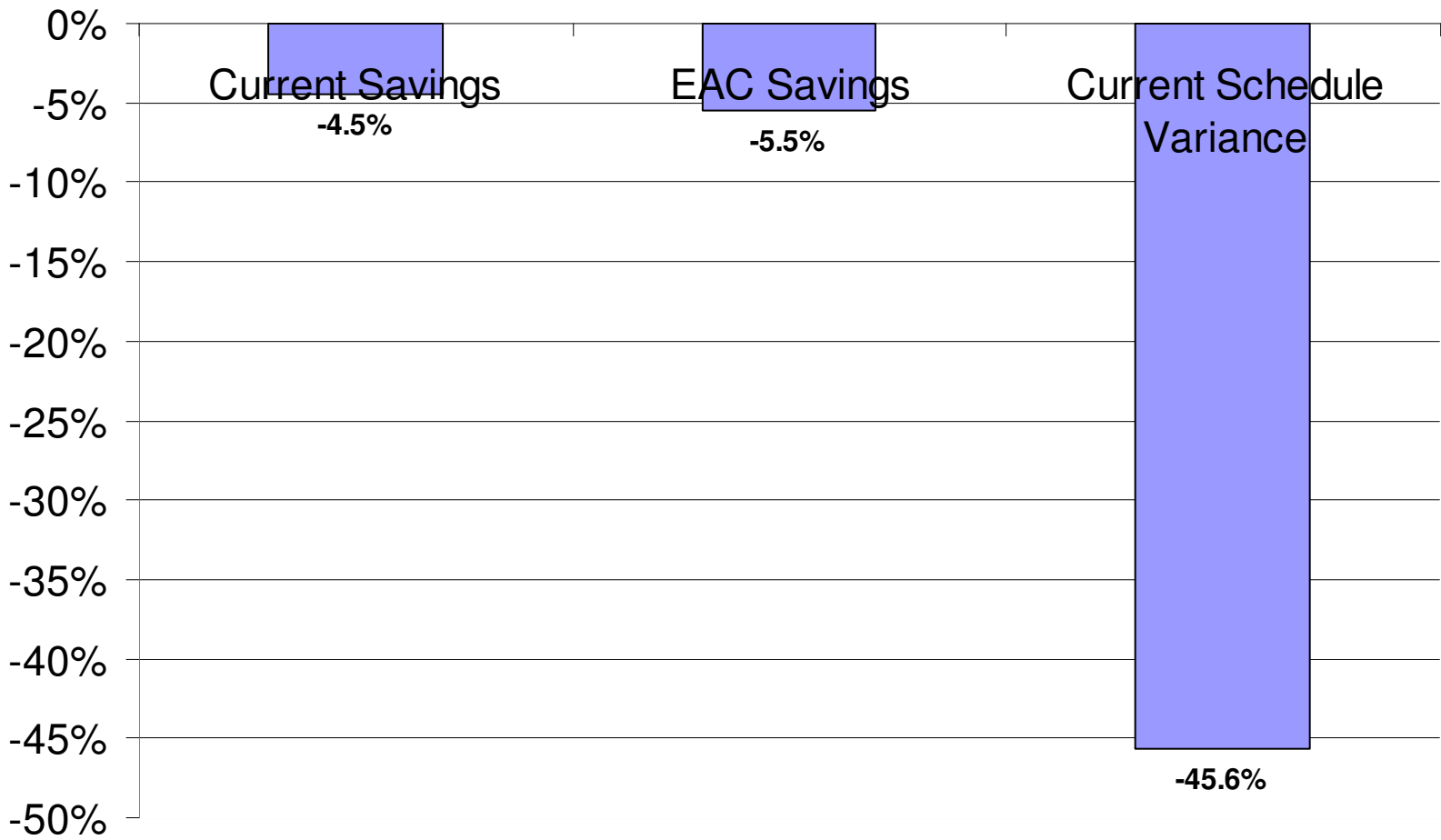


Overall Work Center Performance

(Based on Available Work Orders)



Overall Work Center Performance (Based on Available Work Orders)



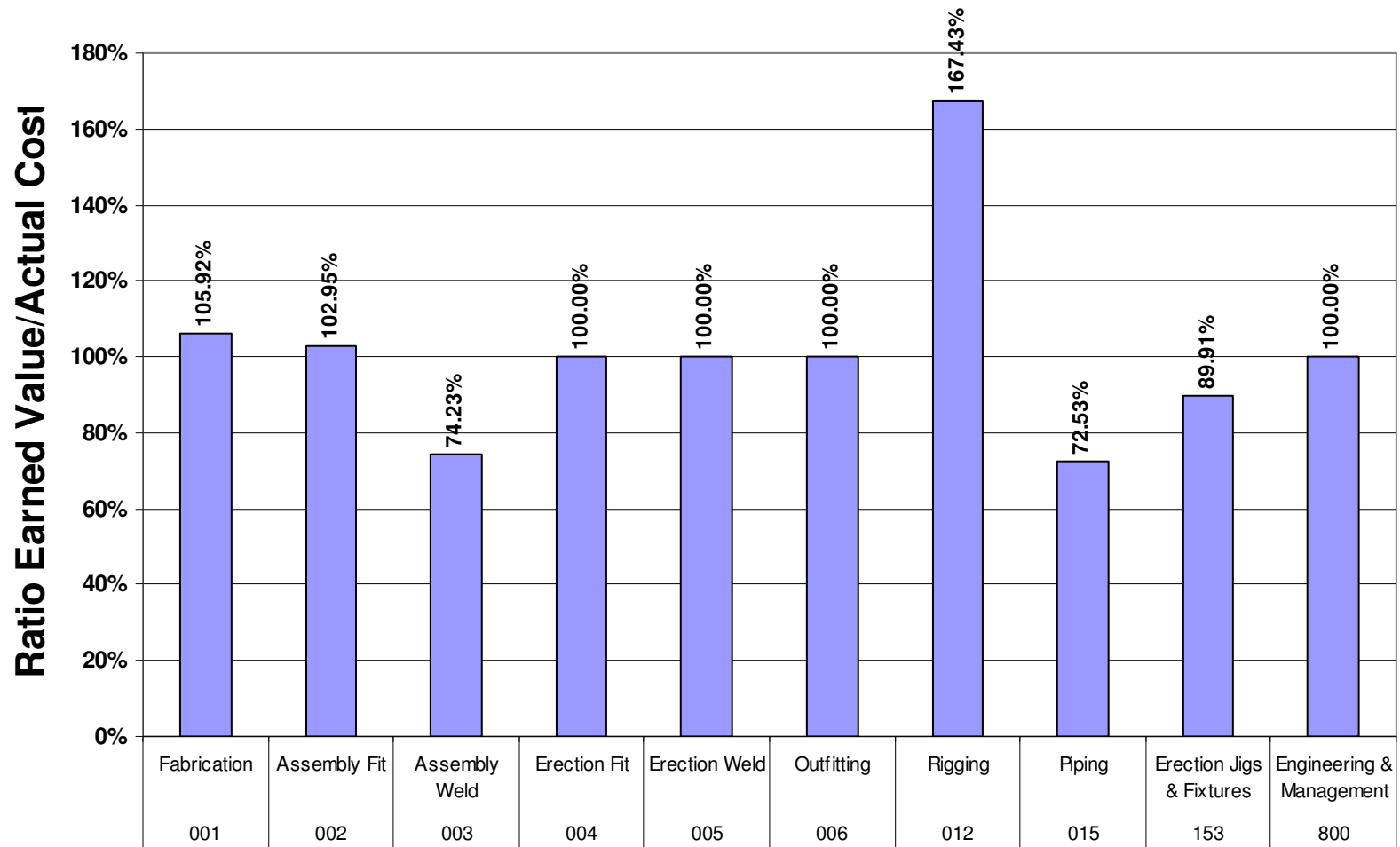
Work Center Cost Efficiency Analysis

PERCEPTION measures a work center's cost (labor hour) efficiency by the ratio of its earned value (Budgeted cost of Work Performed, or BCWP) to its actual costs charged against a project (Actual Cost of Work Performed, or ACWP).

This ratio also is called the Work Center Cost Performance Index. When the index is greater than 1.0 (the earned value is greater than the actual cost), the work center is performing better than what has been budgeted in its work orders.

On the other hand, when the index is less than 1.0, the work center is performing in an over-run condition. It is performing over its budgets.

Work Center Current Labor Hour Efficiency



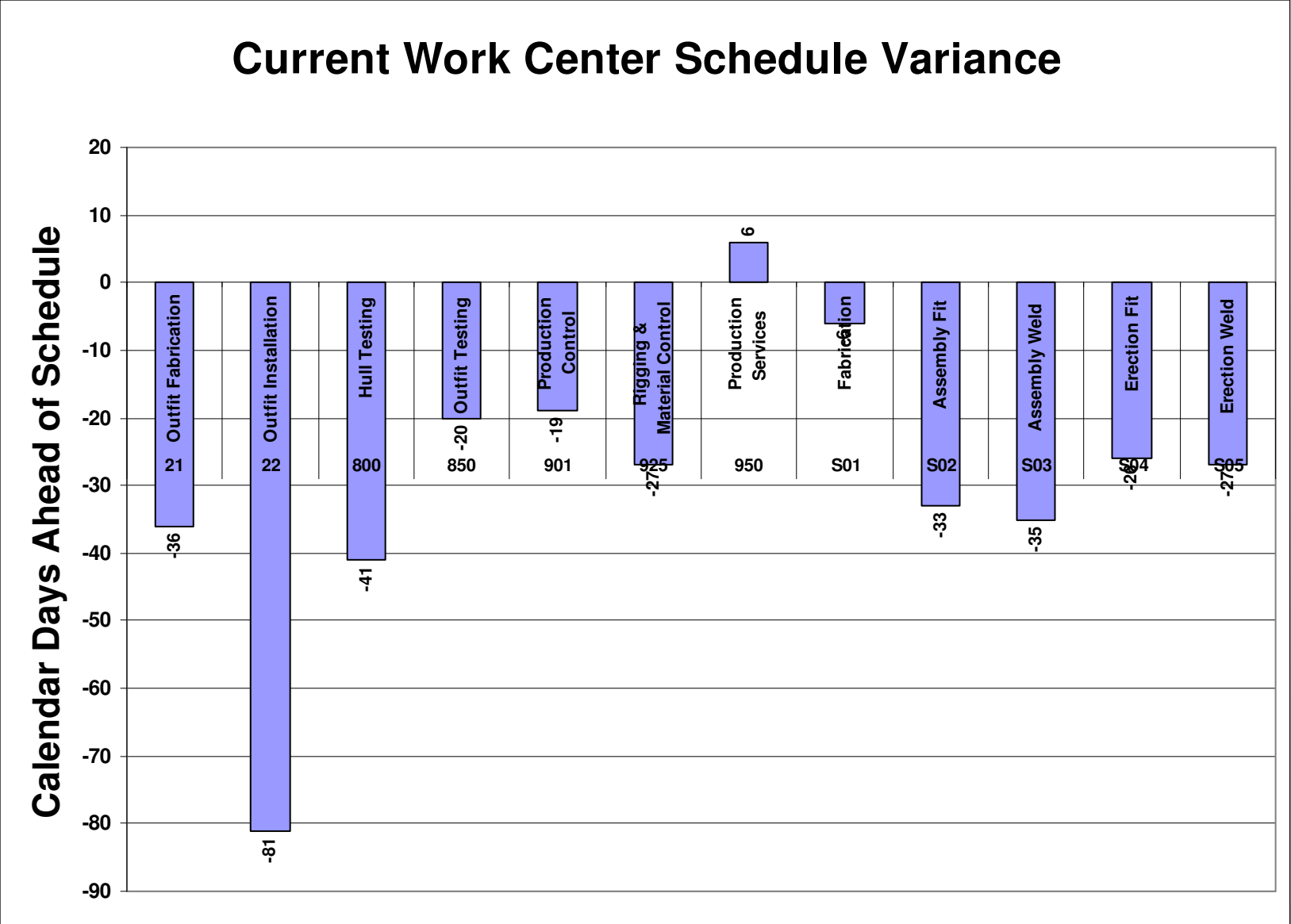
Work Center Schedule Analysis

PERCEPTION measures a work center's schedule and how far the work center is performing off the plan.

This schedule variance is given in terms of work weeks and calendar days.

This information provides a quick indication where there are the more significant schedule bottlenecks that affect not only overall schedules, but impact costs as well.

Current Work Center Schedule Variance



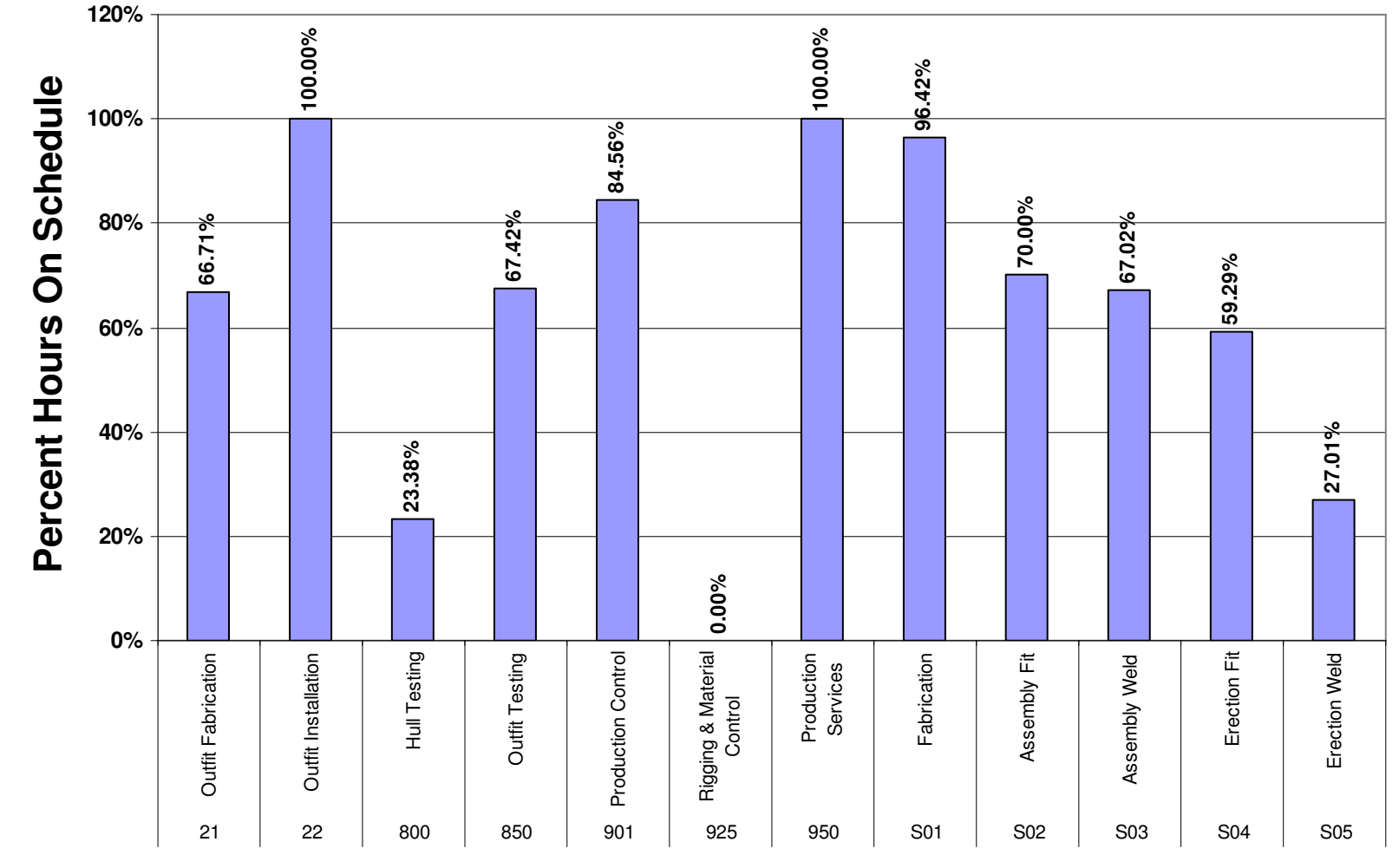
Work Center Schedule Efficiency Analysis

PERCEPTION measures a work center's schedule efficiency by the ratio of its earned value (Budgeted Cost of Work Performed, or BCWP) to its Budgeted Cost of Work Scheduled, or BCWS.

This ratio also is called the Work Center Schedule Performance Index. When the index is greater than 1.0 (the earned value is greater than the scheduled cost), the work center is performing better than what has been planned for its work orders.

On the other hand, when the index is less than 1.0, the work center is performing behind schedule.

Current Work Center Schedule Efficiency



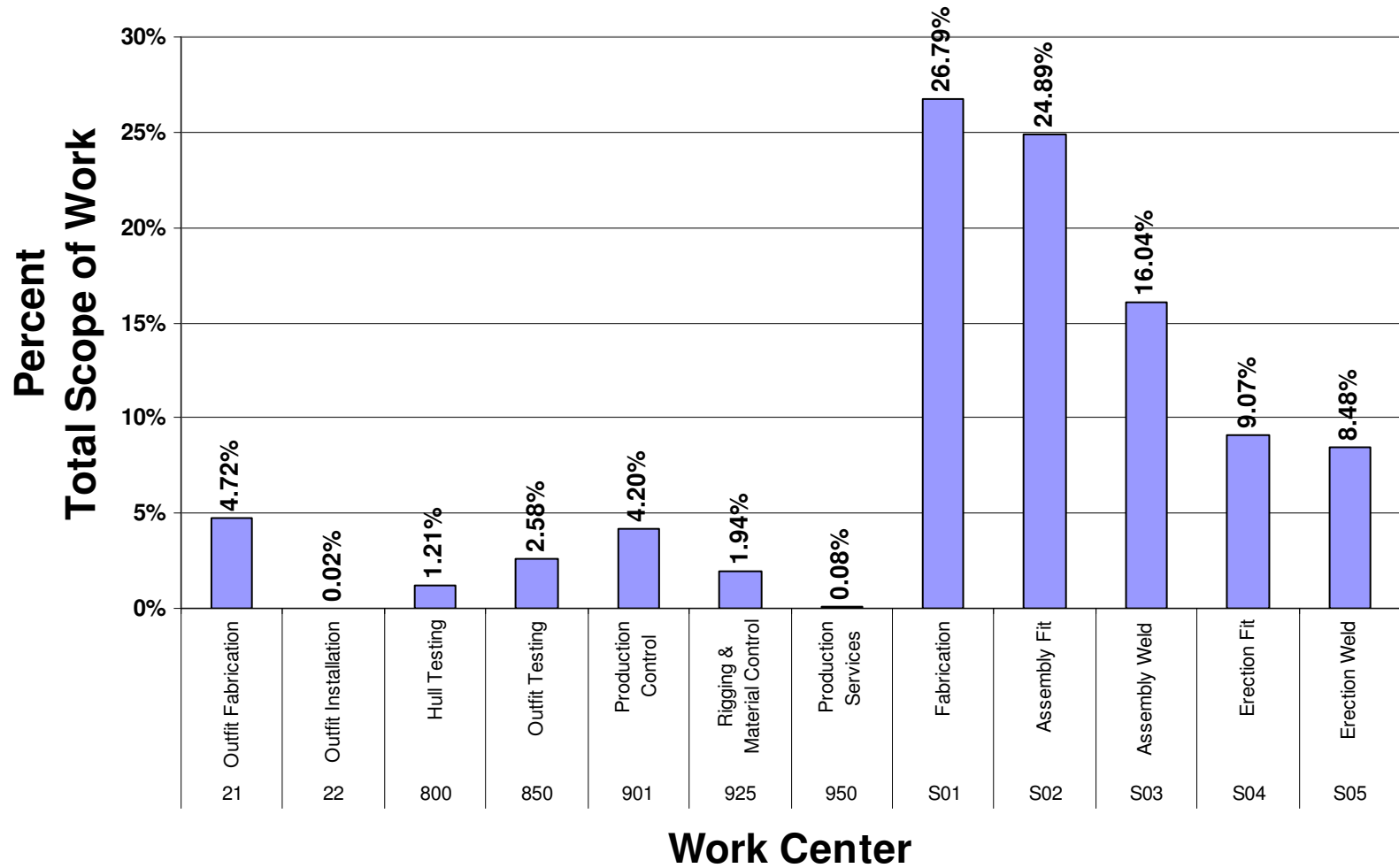
Identifying Major Work Centers

Some work centers are more involved than others in executing the scope of work of a project.

When management focuses on process improvement programs, these major work centers should receive the most attention in developing new ways to drive down costs and shorten process schedules.

These are the centers where improvements are likely to generate the most benefits for the company.

Work Center Cost Drivers

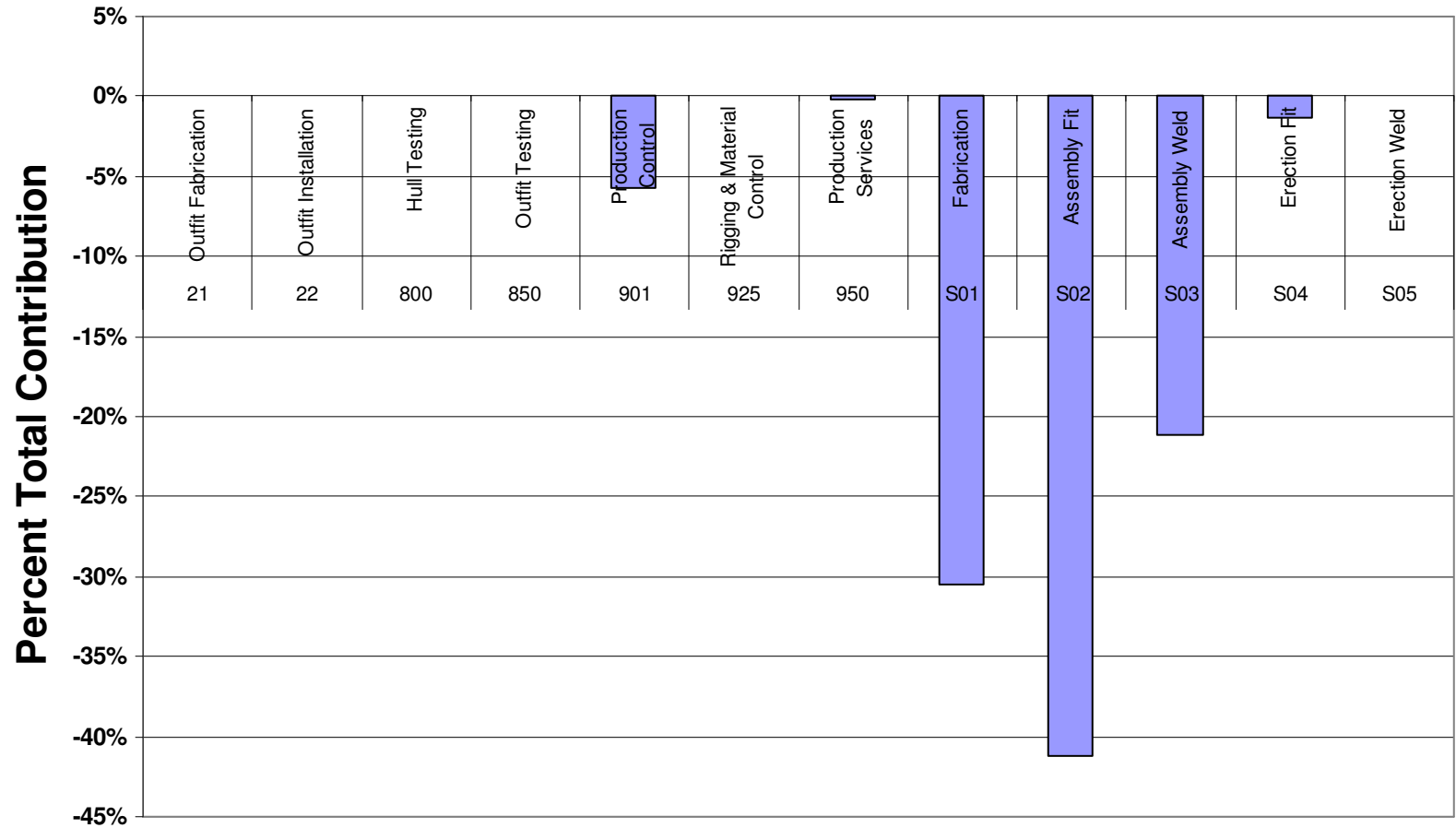


Measuring Major Work Center Contributors to Profit/Loss

Some work centers are more involved than others in executing the scope of work of a project. However, regardless of the planned scope of work, there may be other work centers that are major contributors to the overall project profit or loss.

Centers that are big contributors to a project's loss require management's most immediate attention to determine the cause of their cost problems and their solutions.

Work Center Contribution to Total Project Savings/Losses



Work Center Progress Reports

PERCEPTION summarizes work center progress on demand. The system measures progress and weeks ahead of planned schedules.

In addition, these reports breakdown costs by budget, earned value (BCWP), scheduled budget (BCWS), actual time charges (ACWP), and estimates at completion (EAC), estimate to complete (ETC), and projected savings/loss.

WORK-PAC Center Progress Report (PROG14)**Labor Hours**

Contract: TSHIP CONTRACT to TSHIP CONTRACT

Project: 2002 to 2002

Work Center: 0 to ZZZZZZZZ

Work Center	Description	Percent Progress		Weeks Ahead	% Diff	Current Labor Hours				Final Hours			
		Planned	Actual			BCWS	BCWP	Actual Hours	Schedule Ahead	Budget	EAC	ETC	Savings
T01	Steel Fabrication	100.00	89.57	-584	-10.43	70,081	62,772	61,353	-7,309	70,081	68,500	7,147	1,581
T02	Steel Assembly	100.00	100.00	13	0.00	198,580	198,580	199,130	0	198,580	199,130	0	-550
T03	Steel Erection	100.00	98.89	-575	-1.11	64,914	64,193	56,101	-721	64,914	56,731	630	8,183
T04	Steel Weldout	100.00	94.21	-580	-5.79	93,906	88,469	98,265	-5,437	93,906	104,300	6,035	-10,394
T05	Mould Loft	100.00	100.00	17	0.00	13,802	13,802	11,420	0	13,802	11,420	0	2,382
T06	Material Control	100.00	71.46	-578	-28.54	28,981	20,710	19,874	-8,271	28,981	27,811	7,937	1,170
T07	Planning and Control	100.00	75.82	-579	-24.18	19,328	14,654	13,816	-4,673	19,328	18,222	4,406	1,106
T09	Drawing Office	100.00	79.68	-601	-20.32	27,603	21,994	21,993	-5,609	27,603	27,603	5,610	0
T10	Production Services	100.00	53.06	-584	-46.94	89,882	47,691	49,473	-42,191	89,882	93,248	43,775	-3,366
T11	Carpenter's Shop	100.00	74.29	-585	-25.71	33,244	24,698	24,450	-8,547	33,245	32,912	8,462	333
T15	Miscellaneous	100.00	17.16	-615	-82.84	14,876	2,553	2,208	-12,323	14,876	12,869	10,661	2,007
T21	Joiner Shop	100.00	22.71	-585	-77.29	27,301	6,200	6,616	-21,101	27,301	29,127	22,511	-1,826
T22	Rigging Shop	100.00	72.77	-579	-27.23	21,515	15,656	10,724	-5,858	21,515	14,738	4,014	6,777
T23	Outfit Shop	100.00	55.26	-585	-44.74	28,606	15,808	14,627	-12,798	28,606	26,470	11,843	2,136
T24	Pipe Shop	100.00	62.31	-586	-37.69	42,939	26,755	26,504	-16,184	42,939	42,534	16,030	405
T25	Machine Shop	100.00	62.02	-585	-37.98	12,023	7,457	7,712	-4,566	12,023	12,435	4,723	-412
T26	Electrical Shop	100.00	25.84	-591	-74.16	18,660	4,822	4,821	-13,838	18,660	18,660	13,839	0
T31	On-Board Joinerwork	100.00	29.76	-584	-70.24	27,921	8,309	9,404	-19,612	27,921	31,605	22,201	-3,684
T32	On-Board Rigging	100.00	56.46	-586	-43.54	34,902	19,706	16,201	-15,196	34,903	28,695	12,494	6,208
T33	On-Board Outfit	100.00	25.65	-598	-74.35	54,178	13,897	6,014	-40,281	54,178	46,369	40,355	7,810
T34	On-Board Pipework	100.00	33.90	-601	-66.10	39,511	13,394	0	-26,117	39,511	26,115	26,115	13,396

Work Center Status Reports

PERCEPTION summarizes work center costs on demand. These reports breakdown costs by budget, actual time charges, rework, premium hours, and hours charged after work order closures.

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Center Summary Report by Project (SUM16)

Contract TSHIP CONTRACT - T-SHIP Series Contract

Project: 2002 to 2002

Work Center: 0 to ZZZZZZZZ

Work Center	Description	Budgeted		Actual		Rework		Premium		After Close	
		Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Project 2002 - Severn Bulk Carrier (work orders)											
T01	Steel Fabrication	70,081	1,261,458	61,353	1,065,506	0	0	774	0	5,966	0
T02	Steel Assembly	198,580	3,574,440	199,130	3,444,437	552	9,582	6,103	0	3,340	0
T03	Steel Erection	64,914	1,168,452	56,101	975,532	0	0	821	0	7,511	0
T04	Steel Weldout	93,906	1,690,308	98,265	1,706,915	5	98	4,364	0	4,578	0
T05	Mould Loft	13,802	248,436	11,420	198,188	0	0	486	0	0	0
T06	Material Control	28,981	521,658	19,874	344,907	0	0	552	0	120	0
T07	Planning and Control	19,328	347,904	13,816	239,888	0	0	266	0	22	0
T09	Drawing Office	27,603	496,854	21,993	381,627	0	0	779	0	0	0
T10	Production Services	89,882	1,617,876	49,473	859,557	2,803	48,096	1,176	0	-1,248	0
T11	Carpenter's Shop	33,245	598,410	24,450	424,552	0	0	300	0	856	0
T15	Miscellaneous	14,876	267,768	2,208	38,444	5,143	89,374	161	0	117	0
T21	Joiner Shop	27,301	491,418	6,616	115,084	0	0	5	0	-340	0
T22	Rigging Shop	21,515	387,270	10,724	186,305	0	0	80	0	226	0
T23	Outfit Shop	28,606	514,908	14,627	254,112	0	0	296	0	25	0
T24	Pipe Shop	42,939	772,902	26,504	460,547	0	0	90	0	1,167	0
T25	Machine Shop	12,023	216,414	7,712	134,042	0	0	101	0	742	0
T26	Electrical Shop	18,660	335,880	4,821	83,806	0	0	0	0	0	0
T31	On-Board Joinerwork	27,921	502,578	9,404	163,432	0	0	6	0	267	0
T32	On-Board Rigging	34,903	628,254	16,201	281,558	0	0	156	0	343	0
T33	On-Board Outfit	54,178	975,204	6,014	104,436	0	0	1,099	0	175	0
T34	On-Board Pipework	39,511	711,198	0	0	0	0	174	0	578	0



PERCEPTION summarizes performance at all levels of a project. The following presentations describe those that are critical to the management of any project.

- **Tracking progress and estimates at completion**: these reports track budget, earned value (BCWP), actual costs (ACWP), budgeted cost of work scheduled (BCWS), and estimate at completion (EAC), as well as cost/schedule variances and trends.
- **Measuring and summarizing work order performance** in terms of costs and schedules. The system can focus on any selection of work orders for in-depth analysis of detail performance.
- **Measuring and summarizing work center performance** in terms of costs and schedules. The system can focus on any selection of work orders for in-depth analysis of production process performance.
- **Measuring and summarizing cash flow requirements**. The system tracks cash flow requirements for labor, material & overhead. The system details commitments, receipts, and usage of direct purchase material, subcontract work, owner-furnished material and general stock.

SPAR Associates, Inc.

Over 30 Years Providing

- **Shipyard management software**
- **Software development services**
- **Training & maintenance support**
- **Planning & scheduling services**
- **Cost estimating services**
- **Management consulting**

Over 35 Years Serving the Shipbuilding & Repair Industry

