

Maximizing Maintenance Operations for Profit Optimization: The Journey to Maintenance Excellence

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**Establishing a Strategy for Profit-Centered Maintenance
By
The Maintenance Excellence Institute**

Division of Ralph W. Peters and PEOPLE Inc.

**Part II: Determining Where You Are?
As a Profit-Centered Maintenance Operation:
*The Scoreboard for Maintenance Excellence:***

Ralph W. "Pete" Peters
The Maintenance Excellence Institute
Division of Ralph W. Peters and PEOPLE Inc.
6809 Foxfire Place, Suite 100
Raleigh, North Carolina 27615
919-846-6019
RalphPetePeters@aol.com
<http://www.PRIDE-in-Maintenance.com>

Introduction: This section gets down to the detailed level of "determining where you are?" with actually applying today's best practices for maintenance. It introduces *The Scoreboard for Maintenance Excellence* as today's most complete benchmarking tool to assess your current operation. It addresses very specifically 27 major evaluation categories with 300 evaluation criteria. *The Scoreboard for Maintenance Excellence* provides the first of three benchmarking tools introduced in this series, a global one that "benchmarks where you are with applying external best practices that other successful operations recognize and use. This part also defines how you can develop your own unique *Scoreboard for Maintenance Excellence* for continuously evaluating progress on your journey to Maintenance excellence.

Developed originally as *The Scoreboard for Excellence* in 1981, this external benchmarking process has evolved from over 20 years of successful application to many different types of public and private organizations. Currently there are five versions of the Scoreboard for Excellence:

1. The Scoreboard for Maintenance Excellence
2. The Scoreboard for Facilities Management Excellence
3. The Scoreboard for Fleet Management Excellence
4. The Healthcare Scoreboard for Excellence
5. The Golf Course Scoreboard for Excellence

Make the Commitment: The very first step is to make a commitment to continuous reliability improvement of your total maintenance operation. You should take the time to benchmark your current operation against today's best practices for continuous reliability improvement, preventive/predictive maintenance, planning and scheduling, effective MRO materials management, storeroom operations, inventory control, work orders, work control, and the effective use of computerized systems for maintenance and respective business systems. Making a real commitment is often the hardest first step.

Establish a Maintenance Excellence Strategy Team: One key element of success is having a commitment from top level leaders across the organization. Establishing a The Maintenance Excellence Strategy Team is highly recommended. This high level, leadership driven cross function team made up from maintenance leaders, key operations leaders, shop level maintenance staff, IT, engineering, procurement, operations/customer, financial and planners. The mission of this team is to lead and facilitate the overall continuous reliability improvement process and to ensure measurement of the results that are achieved. This team would also sponsor other teams within the organization to support

implementation of the recommended path forward. One of the very first things that this team should do is to sponsor a comprehensive evaluation of the total physical asset management and maintenance operation and help to determine “where you are”.

How to Determine “Where You Are”: The very first step is to make a commitment to conduct an objective evaluation of your total maintenance operation. Within plant maintenance operations this is maintenance and repair of all production and facility assets, supporting infrastructure, overhaul and renovation activities, engineering support processes as well as all material management and procurement of typical repair parts, supplies plus contracted services. You should benchmark your current operation against today’s best practices for preventive maintenance, planning and scheduling, effective spare parts control, work orders, work management, the effective use of computerized systems for maintenance business management and all other categories from *The Scoreboard for Maintenance Excellence* that we will review next.

A complete review of maintenance operations and the physical asset management process should be conducted. This step is important because it gives you a baseline as to your starting point for making improvements and for validating results. It will help to ensure that you are taking the right steps for taking care of your mission-essential physical assets.

An independent evaluation, in most cases, helps to reinforce the local facilities manager’s desire to take positive action in the first place: to do something to improve the overall maintenance process. For multiple site operations, this provides a great opportunity for developing standard best practices that can be used across the corporation and for new sites. There are a number of very good benchmarking tools to help you get started with this important first step and others along the path forward to Maintenance excellence.

The Scoreboard for Maintenance Excellence: Today’s most comprehensive benchmarking guide, *The Scoreboard for Maintenance Excellence*, is available to define “where you are” in term of today’s best practices for plant maintenance You can also develop your own *Scoreboard for Maintenance Excellence* and begin with a self-evaluation. But we recommend getting help from a consulting resource such as The Maintenance Excellence Institute with at least a pilot plant site.

Developed originally as *The Scoreboard for Excellence* in 1981, this external benchmarking process has evolved from over 20 years of successful application to many different types of public and private organizations. Currently there are five versions of the Scoreboard for Excellence that now includes:

1. The Scoreboard for Maintenance Excellence
2. The Scoreboard for Facilities Management Excellence
3. The Scoreboard for Fleet Management Excellence
4. The Healthcare Scoreboard for Excellence
5. The Golf Course Scoreboard for Excellence

The Scoreboard for Excellence: The Scoreboard for Excellence concept and the various versions have been used to perform over 200 maintenance evaluations and over 5,000 organizations have requested and received copies of them for their internal use. *The Scoreboard for Maintenance Excellence* was used by plant maintenance operations for example at Honda of America after making slight modifications and then using it extensively on their own to help direct their maintenance strategy.

It was then translated into Japanese for presentation to key Japanese executives visiting Honda plants in the USA.

Another excellent example is where The Boeing Commercial Airplane combined elements from this same Scoreboard with their company-wide maintenance goals to develop *The Boeing Scoreboard for Maintenance Excellence*. Over 60 facilities maintenance work units, at region, group and team levels were then evaluated with structure on site visits. The use of this comprehensive best practice guideline specifically tailored to maintenance of aircraft manufacturing equipment (and the associated manufacturing and test facilities complexes) across the United States is still one of the largest internal benchmarking efforts ever undertaken.

The Scoreboard for Maintenance Excellence, as shown in the summary, includes 27 evaluation categories (maintenance best practices areas). It evaluates the total maintenance operation within the scope of coverage for a manufacturing organization. But there can be also be well-defined focus areas when an evaluation is conducted such as on CMMS, planning/scheduling, MRO materials management or on application of continuous reliability and predictive maintenance technologies.

A Complete Evaluation is Recommended: For example, MRO materials management, storeroom operation and procurement may be an area needing special attention. Shop level planning and scheduling is often a typical need and can be a primary focus area. Regardless of the different areas creating the obvious concerns and “organizational pain”, a short-term, piecemeal approach to an evaluation is not recommended. A complete evaluation of the total maintenance operation is highly recommended. There are 300 specific evaluation items that are evaluated through direct shop floor interviews, close observations, and review of information or procedures. Each one is important, some apply and provide more value more than others. But each of the 300 items on *The Scoreboard for Maintenance Excellence* is part of establishing a solid foundation for profit-centered maintenance. Long-term continuous reliability improvement is also a very important connecting link.

The Scoreboard for Maintenance Excellence Summary of Evaluation Categories

CATEGORY	Category Descriptions	Evaluation Items	Total Points in Category	% of Overall Total
A.	The Organizational Culture and P.R.I.D.E. in Maintenance	6	60	2 %
B.	Facilities Organization, Administration and Human Resources	12	120	4 %
C.	Craft Skills Development and PRIDE I Maintenance	12	120	4 %
D.	Operator Based Maintenance and PRIDE in Ownership	6	60	2 %
E.	Maintenance Supervision/Leadership	9	90	3 %
F.	Maintenance Business Operations, Budget and Cost Control	12	120	4 %
G.	Work Management and Control: Maintenance and Repair (M/R)	12	120	4 %
H.	Work Management and Control: Shutdown, Major Overhaul and Construction and Renovation (C/R)	6	60	2 %
I.	Shop Level Planning and Scheduling	18	180	6 %
J.	Shutdown and Major Planning ,Scheduling and Project Management	9	90	3 %
K.	Manufacturing Facilities Planning and Property Management	9	90	3 %
L.	Production Asset and Facilities Condition Evaluation Program	6	60	2 %
M.	Storeroom Operations and Internal MRO Customer Service	12	120	4 %
N.	MRO Materials Management and Procurement	12	120	4 %

The Scoreboard for Maintenance Excellence Summary of Evaluation Categories (Continued)

CATEGORY	Category Descriptions (continued)	Evaluation Items	Total Points in Category	% of Overall Total
O.	Preventive Maintenance and Lubrication	18	180	6 %
P.	Predictive Maintenance and Condition Monitoring Technology Applications	15	150	5 %
Q.	Process Control, Building Automation and Instrumentation Systems Technology	9	90	3 %
R.	Energy Management and Control	12	120	4 %
S.	Maintenance Engineering Support	9	90	3 %
T.	Safety and Regulatory Compliance	12	120	4 %
U.	Maintenance and Quality Control	9	90	3 %
V.	Maintenance Performance Measurement	12	120	4 %
W.	Computerized Maintenance Management System (CMMS) and Business System	18	180	6 %
X.	Shop Facilities, Equipment, and Tools	9	90	3 %
Y.	Continuous Reliability Improvement	15	150	5 %
Z.	Asset Facilitation and Overall Equipment Effectiveness (OEE)	15	150	5 %
ZZ.	Overall Craft Effectiveness (OCE)	6	60	2 %
Total Evaluation Items and Points		300	3000	100%

The Scoreboard for Maintenance Excellence Rating Summary Comments

TOTAL POINT RANGE	THE SCOREBOARD FOR MAINTENANCE EXCELLENCE: RATING SUMMARY COMMENTS
2700 to 3000 (90 – 100%)	Excellent: Practices and principles in place for achieving effective maintenance and World Class performance based on actual results. Reconfirm overall performance measures. Maintain strategy of continuous reliability. Set higher standards for maintenance excellence and continue to measure results.
2400 to 2699 (80 – 89%)	Very Good: Fine tune existing operation and current practices. Reassess progress on planned or ongoing improvement activities. Redefine priorities and renew commitment to continuous reliability improvement. Ensure top leaders see results and reinforce measurement process and use of Maintenance Excellence Index.
2100 to 2399 (70 – 79%)	Good: Reassess priorities and reconfirm commitments at all levels to maintenance process improvement. Evaluate maintenance practices and develop and implement plans for priority improvements. Ensure that measures to evaluate maintenance performance and results are in place. Initiate strategy of continuous reliability improvement.
1800 to 2099 (60 – 69%)	Average: Conduct a complete evaluation of total maintenance operations and current practices. Determine total costs/benefits of potential improvements. Develop and initiate strategy of continuous reliability improvement. Define clearly to top leaders where deferred maintenance is increasing current costs and asset life cycle costs. Gain commitment from top leaders to go beyond maintenance of the status quo.
Less than 1800 (<60%)	Below Average: Same as for Average, plus, depending on the level of the rating and major area that is Below Average, immediate attention may be needed to correct conditions having an adverse effect on life, health, safety, and regulatory compliance. Priority to key issues, major production assets or facility conditions, building systems and other equipment where increasing costs and deferred maintenance are having a direct impact on the immediate survival of the business or the major physical asset’s capability to perform its intended function. Consider contract services as required for survival and for achieving the core requirements for maintenance services

Guidelines for Conducting a Total Maintenance Operations Evaluation: The Maintenance Excellence Institute stands ready to support your mission-essential plant maintenance operation with an evaluation performed by well-qualified staff. While a self-evaluation has benefits; The Maintenance Excellence Institute, however, believes an evaluation conducted by an outside resource provides a greater sense of the “big picture” in terms of objectivity and completeness. Regardless of your situation it is important that you do something to “determine where you are”. Should you want to begin with an internal self-evaluation of maintenance, here are some guidelines to consider when using *The Scoreboard for Maintenance Excellence*.

Key steps are referenced as to the respective parts of this complete five-part series that applies.

1. Obtain Leadership Buy-in

- a) Establish a firm commitment from the organization's top leadership for conducting the total maintenance operation evaluation (Part I)
- b) Establish a firm commitment from the organization's top leadership to take action based on your current needs (Part I)
- c) Maintenance leaders must be brave enough and prepared to share both good news and bad news based upon results of the evaluation to top leaders (Part I)

2. Charter Maintenance Excellence Strategy Team

- a) Establish a Maintenance Excellence Strategy Team to guide and promote improved maintenance practices within your organization whether single or multiple sites (Part II)
- b) Utilize a team-based approach with a cross functional evaluation team specifically chartered for conducting and preparing the results of your evaluation
- c) Have at least one team member with solid background and knowledge in each of the 27 Evaluation Categories

3. Understand the Evaluation Categories and Evaluation Criteria

- a) Gain complete understanding of each evaluation of 27 categories (Part II)
- b) Gain complete understanding of the 300 evaluation items (Part II)
- c) Modify existing evaluation criteria as required for your organization
- d) Define importance and weighted value of evaluation categories
- e) Add or delete evaluation criteria as required for your unique operation
- f) Ensure that all team members understand the scoring process for each evaluation item
- g) Ensure that consistency in scoring each evaluation category is applied using standard guidelines

4. Develop Action Plan

- a) Determine baseline information requirements, persons to interview and observations needed prior to start of evaluation
- b) Develop schedule and implementation plan for the evaluation
- c) Develop and implement a communication plan within the organization to inform all about the process

5. Conduct Evaluation of Total Maintenance Operation

- a) Assign team members to specific evaluation categories (ideally, in two-person teams for each category)
- b) Conduct kickoff meeting, firm up specific interview and observation schedules etc.
- c) Conduct the evaluation, record observations and assign scores to each evaluation item
- d) Ensure CMMS is an effective facilities business management tool (Part III)

6. Analyze, Review and Present Results

- a) Review all scoring for consistency
- b) Develop final results of the evaluation and document in a written report
- c) Determine strengths/weaknesses and priorities for action
- d) Define potential benefits either direct or indirect savings or gained value from existing resources
- e) Gain internal team consensus on methodology for determining benefits and the value and type of savings
- f) Present results to top leaders with specific benefits and improvement potential clearly defined
- g) Refine results based on feedback from top leaders
- h) Gain commitment from top leaders for investments to implement recommendations

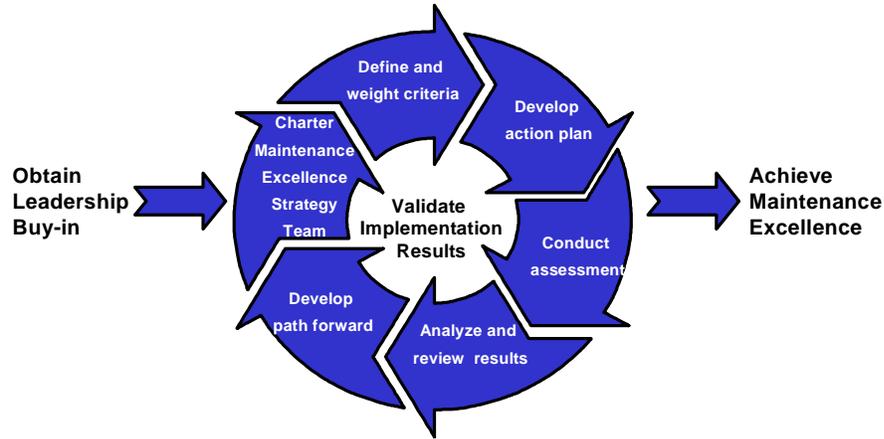
7. Develop Path Forward for Maintenance Excellence

- a) Develop a strategic plan of action for implementing best practices (Part IV)
- b) Define tactical plans and operational plan of actions (Part IV)
- c) Define key performance measures, especially those that will validate projected benefits (Part V)
- d) Implement methodology to measure performance and results (Part V)
- e) Measure benefits and validate ROI (Part V)
- f) Maintain a continuous reliability improvement process (i.e. repeat evaluation process)
 - ✓ Followup initial use of Scoreboard for Maintenance Excellence with periodic evaluations every six to nine months(Part II)
 - ✓ Follow-up initial use of CMMS Benchmarking System (Part III)
 - ✓ Continuously validate results with Maintenance Excellence Index (Part V)

Invest in External Resources: It is extremely important to know where your organization stands on physical asset management and maintenance issues and challenges so it can quickly identify areas for improvement. Every delay along the way delays receiving the potential benefits and added value. Self-evaluations are recommended and very good starting points when nothing else is available for using external support. But a more comprehensive, objective evaluation performed by external consulting resources (or possibly qualified corporate level staff (with decades of maintenance-focused expertise is highly recommended. In the long run, external resources will provide additional justification and measurable results. Total operations success depends upon effective maintenance of physical assets. The Maintenance Excellence Institute can be that external resource to support this essential first step after your organization makes the initial commitment. And The Maintenance Excellence Institute certainly looks forward to working with your facilities organization in the future to support this very important area of your total manufacturing operation.

Our next section in Part II provides: A Strategy for Developing and Using an Organizational Scoreboard for Maintenance Excellence across Multiple Sites

Total Maintenance Operation Self-Evaluation



A Strategy for Developing and Using an Organizational Scoreboard for Maintenance Excellence Across Multiple Sites

Objective: The objective of this section of Part II is to provide guidelines for developing a Scoreboard for Maintenance Excellence as an internal benchmarking guide a standard practices for all maintenance operations within a multiple site operation. Then to use this organizationally specific benchmarking guide to conduct a pilot evaluation, to provide a recommended path forward and to implement results with a measurement process that will validate ROI.

Scope: A recommended scope is all of the total maintenance operation at the pilot site, including evaluation of the current CMMS/EAM installation, the maintenance storeroom operations, MRO procurement and the overall continuous reliability improvement initiatives The scope of this recommended path forward strategy is outlined below:

Recommended Path Forward Strategy:

1. Define Impact on Capacity, Quality and Internal Customer Satisfaction: Determine specific areas where the total maintenance process can have or has had an impact on throughput, quality and customer satisfaction. The team determines key evaluation areas related to capacity constraints due to maintenance, negative impacts on quality, internal customer service or other functional areas that should be incorporated into the evaluation process. A cooperative link to maintenance leaders and engineering staff at other sites should be initiated.

- Typically at this point, The Maintenance Excellence Institute recommends that a Maintenance Excellence Steering Team be chartered to help guide the resulting improvement process across the multi-site operation.
- For a large operation, it is also highly recommended that another new C position be established; the Chief Maintenance Officer (CMO) to support profit optimization via

maximizing physical asset management and maintenance of production assets and facilities.

- The Maintenance Excellence Institute develops a recommended Maintenance Excellence Strategy Team Charter and a recommended position description for a Chief maintenance Offices.

2. Establish Scoreboard for Maintenance Excellence: Develop an enhanced version of The Maintenance Excellence Institute's *Scoreboard for Maintenance Excellence* that incorporates evaluation criteria specific to the organization into the baseline evaluation. The client and The Maintenance Excellence Institute Team develop a *Scoreboard for Maintenance Excellence* that defines maintenance best practices and standard procedures that the client wants to adopt as its corporate baseline or standard.

The Boeing Commercial Airplane example used in Part II combined elements from this same Scoreboard with their company-wide maintenance goals to develop *The Boeing Scoreboard for Maintenance Excellence*. All facilities maintenance work units, at region, group and team levels were then evaluated. This effort is still one of the largest internal benchmarking efforts ever undertaken. To evaluate maintenance information technology resources, the pilot evaluation (when performed by The Maintenance Excellence Institute) will utilize *The CMMS Benchmarking System* to define current utilization plus detect any limitations of the current computerized maintenance management system.

3. Conduct Pilot Evaluation at a Client Site: The benchmark evaluation of the pilot site is conducted using the *Scoreboard for Maintenance Excellence* developed for the client. The approach for interviews, observations and on-site time is to:

- Outline data and information requirements prior to start date of pilot evaluation
- Preview data prior to evaluation start date
- Establish tentative schedule for on-site time
- Conduct short kick-off meeting to confirm schedules and make introductions.
- Conduct staff level interviews, observe operations, and interview shop floor staff—four days of on-site time
- Conduct customer and operations staff interviews
- Evaluate the total maintenance and facilities operation (both in-house and contract operations) based upon the *Scoreboard for Maintenance Excellence* best practice categories
- Perform baseline evaluation of the current CMMS installation using The Maintenance Excellence Institute's *CMMS Benchmarking System*
- Interview maintenance leaders, selected customers, procurement and storeroom personnel, and crafts people.
- Complete the evaluation
- Prepare the results of the evaluation off-site.

4. Define Opportunities: Specific observations are noted, baseline ratings established and recommendations made for each evaluation category based on the results of the evaluation. The Maintenance Excellence Institute staff prepares the initial “draft” results from the evaluation, and the client and Maintenance Excellence Institute team develops consensus on final recommendations, discusses of observations in the report, and defines the state of plant maintenance at the pilot site.

5. Define Potential Benefits and ROI: Determine potential benefits and return on investment possibilities for the pilot site. This step involves obtaining baseline information in a number of key areas that will form the foundation for projected savings and total operations benefits. The client and The Maintenance Excellence Institute team develop a consensus on the final scope of projected savings and gained value of productivity improvements. If these benefits are representative of the potential at other sites, then this is denoted. From this information, a consensus on projected benefits is established for:

- a. Value of asset/equipment uptime providing increased capacity and throughput
- b. Value of increased quality and service levels due to maintenance
- c. Value of facility availability or cost avoidance from be non-available
- d. Value of increased direct labor utilization (production operations)
- e. Gained value from increased craft labor utilization/effectiveness via gains in wrench time
- f. Gained value from increased craft labor performance/efficiency
- g. Gained value of clerical time for supervisors, planners, engineering and admin staff
- h. Value of MRO materials and parts inventory reduction
- i. Value of overall MRO materials management improvement
- j. Value of overall maintenance costs reductions with equal or greater service levels
- k. Value of increased facility and equipment life and net life cycle cost reduction
- l. Other manufacturing and maintenance operational benefits; improved reliability and other reduced cost

6. Document Results of Pilot Evaluation and Plan Best Practice Implementation: The Maintenance Excellence Institute prepares the evaluation report with client reviews and defines specific improvement opportunities. A recommended path forward for implementation is then developed. The client and The Maintenance Excellence Institute team plan and present results of the evaluation to key leaders in the organization. The strategic level plan with both tactical and operational items that evolves from this step requires a close team effort between the client and The Maintenance Excellence Institute Team and leadership at the pilot plant facility. Internal and external resources that are needed for implementation are identified. The Maintenance Excellence Institute provides proposals as appropriate for support to implementing recommendation to achieve implementation of potential results. The client and The Maintenance Excellence Institute team ensure that the strategic plan of action is fully integrated with the business plan.

7. Measure Results of Implementation: Develop a recommended *Maintenance Excellence Index (MEI)* that will measure and validate results of continuous reliability and maintenance process improvements. This key deliverable utilizes The Maintenance Excellence Institute's proven methodology for managing, improving and measuring maintenance as a profit center. It involves developing a consensus on 10-15 metrics that will measure overall performance of the Maintenance operation.

This process of “internal benchmarking” includes high priority metrics in the specific areas where benefits and savings were projected in any of the 12 areas from Step 5 above... Typically this step requires the Maintenance Excellence Strategy team's consensus on the metrics to be included in the *Maintenance Excellence Index* or a leadership decision is made on the metrics to be used. This step also requires establishing baseline values and performance goals for each metric selected and continuous measurement of improvement during implementation to validate projected results defined in Step 5.

8. Refine Scoreboard for Maintenance Excellence: Revise/update the *Scoreboard for Maintenance Excellence* based on actual results of the pilot evaluation. Baseline evaluation criteria are adjusted to fit the unique maintenance and organizational culture requirements of each client along with incorporating lessons learned from the pilot evaluation.

9. Plan Evaluations at Other Sites: The Maintenance Excellence Institute team with the client develops the plan of action for the evaluation at the other sites. At this point a Chief Maintenance Officer should be firmly established to support the other evaluations and the maintenance improvement processes that continuously evolve at each site. Two important recommendations:

- The Maintenance Excellence Institute highly recommends the establishment of a top level maintenance champion (CMO) responsive to the needs of multiple sites within the organization. This internal person will be essential for providing technical leadership to future best practice implementations, standard practice development, and the measurement process that will be common to all sites.
- The Maintenance Excellence Institute also highly recommends that future evaluations continue with the independent expertise from The Maintenance Excellence Institute for objectivity and consistency of initial baseline ratings at all sites. The client's maintenance champion would then conduct all follow up evaluations, support best practice implementation, support the measurement process and follow-up on implementation progress across the total organization.

10. Present Evaluation Results and Recommendations to Top Leaders: The evaluation report with specific recommendations and the recommended path forward for implementation is presented to key leaders by the client and The Maintenance Excellence Institute team. Included below is a summary of key deliverables that can be expected from successful execution of Step 1 to Step 10.

Summary of Deliverables to Achieve Results

- a. A recommended Maintenance Excellence Strategy Team Charter and functioning team
- b. *The Scoreboard for Maintenance Excellence* developed for the organization and revised if required after the pilot evaluation
- c. In-depth evaluation of current maintenance practices at a pilot site
- d. Recommendations in all 27 maintenance evaluation categories
- e. Benchmark evaluation of the current CMMS/EAM installation based on the *CMMS Benchmarking System* criteria.
- f. Recommendations to improve utilization of the current CMMS/EAM installation
- g. Recommended path forward for a strategic level plan with tactical/operational items
- h. Definition of improvement opportunities
- i. Summary of potential benefits with an estimate of savings and gained value for each
- j. Documented evaluation of results in a written report
- k. Recommended performance measurement process ready for immediate implementation
- l. A *Maintenance Excellence Index* that validates overall performance improvement
- m. Recommended metrics, data sources, and documentation in a standard operating procedure guide for the client-specific MEI
- n. Plan of action for future evaluations at other sites

- o. An organization maintenance champion (CMO) established
- p. Oral presentation of results to top leaders
- q. A proposal that defines where The Maintenance Excellence Institute can best support the recommended Path Forward.

The project benefits and the measurement process now ready to implement helps to ensure commitment to action by the client’s top leaders. The Maintenance Excellence Institute provides proposals as appropriate to best support early achievement of potential savings.

11. Conduct Evaluations at Other Sites and Begin Maintenance Excellence Process: This step begins the scheduled evaluations at other sites, defines additional opportunities, plans and implements recommendations and validates results. Continuous reliability improvements and refinements to Steps 3 through 7 are made as the Maintenance excellence process continues.

Typical Project Plan of Action: The recommended path forward offers an excellent opportunity for immediate results at the pilot site, plus the time to learn from this evaluation before conducting future evaluations. The Maintenance Excellence Institute highly recommends having a Facilities Excellence Steering team in place to provide overall leadership, support, and direction. The measurement of results ensures that initial projections of benefits are achieved and that the ROI for this pilot effort exceeds expectations. Included below is a typical five-week project schedule where the pilot evaluation includes two sites.

Path Forward Action Items	Weeks after Project Initiation				
	Week 1	Week 2	Week 3	Week 4	Week 5
Step 1: Define Impact on Customer Service					
Step 2: Establish Client Scoreboard					
Step 3: Conduct Pilot Evaluations					
• Site One					
• Site Two					
Step 4: Define Specific Opportunities					
Step 5: Define Potential Benefits					
Step 6: Document/Plan for Pilot Results					
Step 7: Measure Pilot Results					

Step 8: Refine Client Scoreboard					
Step 9: Plan Global Evaluations					
Step 10: Present Results					

Typical Project Plan of Action:

Investment Requirements: The Maintenance Excellence Institute views all maintenance operations as profit centers. Maintenance and physical asset management operations at client sites are true contributors to profit generation or increased service levels. The Maintenance Excellence Institute believes the cost of its services will be a very good investment, one that can be validated through the *Maintenance Excellence Index* that will be established. The investment to retain The Maintenance Excellence Institute to complete this proposed initiative will be based upon a fixed fee plus actual travel expenses as they are incurred.

The opportunities for measurable results in almost all organizations are significant. It is highly recommended that The Maintenance Excellence Institute help to develop your Scoreboard for Maintenance Excellence and to conduct the pilot evaluation. To discuss the best approach for your organization, to request that a fixed cost proposal be developed for your organization or for help with setting a data and planning the pilot evaluation contact:

Ralph W. “Pete” Peters
 The Maintenance Excellence Institute
 6809 Foxfire Place, Suite 100
 Raleigh, NC 27615
 E-Mail: RalphPetePeters@aol.com
 Office: 919-846-6019
 Fax: 919-846-9804
<http://www.PRIDE-in-Maintenance.com>

Bio of Ralph W. "Pete" Peters

President and founder for **Ralph W. Peters and PEOPLE Inc.** a consulting firm with three divisions for total operations improvement; The Maintenance Excellence Institute (maintenance), The Manufacturing Excellence Institute (manufacturing) and The Institute for Public Service Excellence (governmental). His practical engineering experience and technical leadership in the maintenance, manufacturing and governmental productivity consulting fields has helped hundred of operations achieve manufacturing operations success and maintenance excellence in plant, fleet and facility maintenance operations.

His scope of experience in governmental operations productivity has firmly established his personal capabilities and that of The Institute for Public Service Excellence to support value added government services. Pete is a senior member of the Institute of Industrial Engineers, the Association of Facility Engineers and the Society of Maintenance and Reliability Professionals He has been involved in manufacturing operations management, systems implementation, facilities management, maintenance and governmental productivity consulting for more than 30 years. He is retired from the US Army Corps of Engineers/NC Army National Guard (1995) with 28 years of service and serving in Viet Nam and during Desert Storm.

Pete is author of the upcoming books; *Profit-Centered Maintenance: The New Millennium Strategy for Maintenance Excellence* and *PRIDE in Maintenance*. He is editor/primary author for *The Guide to Computerized Maintenance Management Systems*, Scientific American Newsletters LLC, author of the maintenance chapters in *The Warehouse Management Handbook* and *The Future Capable Company* from Tompkins Press and John Wiley's new *Handbook of Industrial Engineering, 3rd Edition*. A recognized leader in the areas of implementing manufacturing and maintenance best practices, profit-centered maintenance, performance measurement, productivity improvement for government operations and providing value-added total operations consulting, He is also the author of over 200 articles and publications and as a frequent speaker has delivered presentations on manufacturing and maintenance-related topics worldwide. He received his BSIE and MIE from North Carolina State and is a graduate of the US Army Command and General Staff Course and the Engineer Officers Advanced Course.

Clients from the manufacturing and maintenance sectors have included operations in the petrochemical, aerospace, manufacturing, mining, pharmaceutical, hand-tool manufacturing, utilities and automotive industries, in addition to construction fleet management, public transit operations and facilities management for healthcare, educational and governmental facility complexes.