

The Council of State Governments
2005 INNOVATIONS AWARDS PROGRAM

Commonwealth of Pennsylvania
Pennsylvania Department of Transportation
Maintenance Efficiency and Cost Effectiveness (MECE)

1. Program Name: Maintenance Efficiency and Cost Effectiveness (MECE)
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9. Please provide a two-sentence description of the program.

The Maintenance Efficiency and Cost Effectiveness (MECE) initiative was developed by a team of 81 experienced maintenance professionals that produced 92 recommendations for making improvement in the areas of Asset Management, Staffing, Winter Operations Efficiency, Department Force Work versus Contracting and Equipment Optimization. Through the implementation of MECE, PennDOT has successfully refocused the highway maintenance community on core business functions, redirected savings, increased productivity, and facilitated the use of best highway maintenance business practices.

10. How long has this program been operational (month and year)? **Note: the program must be between 9 months and 5 years old on May 1, 2005 to be considered.**

January, 2004

11. Why was the program created? What problem[s] or issue[s] was it designed to address? **Indicate how the program applies to the “change driver” that you listed above.**

Change Driver 10, The Role of Government.

The rising cost of highway maintenance, expanding customer expectations, and loss of institutional knowledge due to employee attrition has emphasized the need to take a hard look at business processes, procedures and policies. What the public wants, and what they are willing to pay must be recognized and continuously evaluated. Pennsylvania’s MECE initiative focuses on providing “right sized” resources and programs that will meet the public’s needs, maintain their confidence and provide a mechanism to control and reduce the cost of operation. In addition to making specific program improvements, the MECE initiative employs a Plan-Do-Check-Act philosophy that will drive continuous improvement in all areas of highway maintenance. The nation’s highway infrastructure is the critical link in transportation requirements. The growing need for safe, efficient and effective movement of goods and people must be provided as economically as possible. The MECE effort has, and will continue to provide, a mechanism for the improvement of highway maintenance through attention to core government responsibilities in transportation.

Some specific contributing factors were:

- Decentralization has led to a lack of uniformity among the Engineering Districts
- Reducing District and Central Office maintenance staff involved in oversight and quality assurance roles has resulted in reduced accountability and varied local interpretations of policies
- Data, reports and other management tools are underutilized
- Lack of maintenance planning was evident

- High percentage of maintenance personnel turnover (management and workforce) mandates a concerted “back to basics” training effort

12. Describe the specific activities and operations of the program in chronological order.

In May, 2003, PennDOT Deputy Secretary for Highway Administration, Gary Hoffman, P.E. directed the formation of the *Maintenance Efficiency and Cost Effectiveness* (MECE) Steering Committee to address six initiatives for highway maintenance:

- Asset Management
- Assess staffing positions in the county maintenance organization
- Winter Operations Efficiency
- Optimization Model for Department Force Work versus Contracting
- Equipment Optimization
- Implementation Strategies

PennDOT’s largest and most visible function is the highway maintenance operation. With a \$1.3 billion annual budget and 7,500 of the Department’s 12,000 employees, an efficiency improvement effort in highway maintenance would create significant cost reductions that can be redirected to highway improvements. The aforementioned steering committee assembled sub-groups staffed with 81 volunteers provided by the districts and central office. The team members were chosen based their specific area of knowledge as it related to each of the aforementioned objectives. Each steering committee member served as process owner for one of the sub-groups. The role of the process owner was to keep the sub-group on track and focused on the assigned objectives, and to provide status reports for the steering committee meetings. The steering committee was responsible for reviewing each recommendation and finding, and for preparing the final report.

A total of 92 recommendations were developed. Following is a summary of the results:

Asset Management - Developing Standard Measures

A standard measurement criterion was developed for core maintenance business activities. Each core maintenance area will be scored based on performance. Scores for each core area will be rolled into one overall score that each county maintenance organization will receive yearly. The tool will be used to monitor overall performance of organizations throughout the year and provide an opportunity to identify specific areas for improvement. Measured core maintenance areas are: maintenance efficiency, planning, equipment, winter operations, environmental, quality, materials management, customer service and safety.

Asset Management – Pavement Management and Programming

Recommendations to improve pavement management and establish uniform guidance for use by each district office were developed. Recommendations included: interim pavement management guidelines, a comprehensive pavement management system, pavement management cycles, project inventory reports and business plan surface improvement mileage, and IRI projections.

Asset Management – Planning and Scheduling

Recommendations were made to improve the use of existing information and develop tools to help improve budgeting and planning over a 5 year period. Recommendations were: update the maintenance manual, standard budget preparation and resource balancing methodology, re-institute a planning QA, develop a training package, develop non-pavement maintenance cycles and standardize GIS applications.

Asset Management - Data and Report Analysis

Recommendations were: improve data consistency and report management.

Assess County Administrative and Operation Positions

Recommendations were:

Short Term: work site reporting, combine administrative support functions, redesign the training structure, and redesign maintenance staffing guidelines.

Long Term: evaluate county consolidations, negotiate crossing county lines, full utilization of district traffic line paint crews, explore potential for civil service coverage, create a more efficient operator certification training policy, evaluate the pay scale for specialized equipment operators, develop and implement a model county administrative structure, implement a flexible work week for maintenance and trades employees.

Winter Operations Efficiency

A plan to address three winter service components that will provide maximum dollar savings and improve efficiency was developed: fleet size, material management, and winter preparedness.

Optimization Model for In-House Work versus Contracting

An easy to use and consistent make-buy process was developed for maintenance work activities that identify whether to contract or perform an activity with in-house forces. Recommendations included: resource availability, personnel, contract availability, quality, environmental and cost. This comparison is on an activity-by-activity and location-by-location basis.

Equipment Optimization

The findings ranged from the identification of potential savings to the identification of areas that need improvement to collect “usable” data. The recommendations were: reduce the fleet size, reduce rented equipment, re-assess state vehicle assignment, share equipment, measure productivity, use equipment replacement cycles, adjust garage staffing levels, customer service, preventive maintenance, use recap tires, garage operations and fuel consumption.

Implementation process:

- District Executives determined the top 10 recommendations that would provide the most significant improvement to the maintenance operation. (January, '04)
- The final recommendations were presented by Deputy Secretary Hoffman to all District Executives, Assistant District Executives-Maintenance, District Maintenance Managers and County Maintenance Managers. (March, '04)
- A MECE Champion was assigned to develop a plan to address all 92 recommendations. (March, '04)
- An implementation Steering Committee, lead by the MECE Champion and consisting of District Leadership and the Process Owners was empanelled to guide the implementation. (March, '04)
- The top 10 recommendation were assigned to Central Office Business Process Owners for development of implantation plans. (April, '04)
- Cost savings methodologies and matrixes were developed for all subjects that will directly influence actual monetary and productivity savings. (April, '04 – June, '04)
- Each implementation includes a Plan-Do-Check-Act process that will engrain the improvement into the business process and ensure continuous improvement (Ongoing)
- Three newly appointed Regional Maintenance Advisors are responsible to ensure compliance, evaluate results and assist the field in the implementation of new procedures. (November, '04 – April, '05)
- Districts were required to report on MECE implementation progress as part of their business plan presentation the Department's Executive Leadership Staff. (FY 04/05 thru 06/07)

Results to date:

- Implementation of a County Maintenance Management Tool (CMMT) consisting of 17 measures designed to monitor critical maintenance activities and provide a mechanism for measuring results
- Implementation of a department-wide, electronic Winter Materials Management Program to capture and analyze winter material use and snow route data
- Through snow route analysis and best practice analysis reduced the snow removal department truck fleet by 34 units and rental fleet by 114 units in FY 04/05. Additional fleet reduction is planned for FYs 05/06 and 06/07
- Implemented a standard budget and resource balancing methodology and developed a planning training package
- Developed and implementing a training program for pavement management practices
- Developed summary level and exception type reports to include a method to provide the reports effectively to users
- Reduced the light vehicle fleet by 121 vehicles

13. Why is the program a new and creative approach or method?

Many new and improved programs are treated as the “flavor of the day”, which tend to create a hit and miss effect on program success and longevity. Each program generated from a MECE recommendation is incorporated into an existing business area and a process cycle known as Plan-Do-Check-Act is employed to ensure programs are continuously monitored and adjusted to meet the evolving transportation needs of the public.

14. What were the program’s start-up costs? (Provide details about specific purchases for this program, staffing needs and other financial expenditures, as well as existing materials, technology and staff already in place.)

Existing resources were used in all development phases of the MECE initiative. Realignment of the Central Office Bureau of Maintenance and Operations was necessary to accommodate fulfillment of the MECE initiative.

15. What are the program’s annual operational costs?

Three Regional Maintenance Advisors (RMA) for program management were established.

Annual median salary \$61,301.00 X 3 = \$183,903.00

16. How is the program funded?

No special funding required. Three RMA positions derived from existing positions (no positions were added)

17. Did this program require the passage of legislation, executive order or regulations? If YES, please indicate the citation number.

No

18. What equipment, technology and software are used to operate and administer this program?

None

19. To the best of your knowledge, did this program originate in your state? If YES, please indicate the innovator's name, present address, telephone number and e-mail address.

Yes.

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20. Are you aware of similar programs in other states? If YES, which ones and how does this program differ?

No.

21. Has the program been fully implemented? If NO, what actions remain to be taken?

To date 26 of 92 recommendations have been implemented and 8 are in process. A plan is being developed to address the remaining 58 recommendations.

22. Briefly evaluate (pro and con) the program’s effectiveness in addressing the defined problem[s] or issue[s]. Provide tangible examples.

Pros -

- Projected Savings & Reallocation of Funds

04/05	05/06	06/07	07/08	08/09
\$11.4M	\$10.4M	\$10.4M	\$9.1M	\$9.1M

- Refocus operation to core responsibilities
- Engagement of employees at all levels
- Attention to detail
- Systematic approach and repeatable results
- Continuous improvement

Cons -

- Potential for internal and public awareness of program changes which create the opportunity for criticism and the uncertainty of change (i.e. reduction of snow removal fleet while maintaining an acceptable level of service)

23. How has the program grown and/or changed since its inception?

The Check and Act part of the Plan-Do-Check-Act cycle creates continuous program improvement (change).

24. What limitations or obstacles might other states expect to encounter if they attempt to adopt this program?

The greatest challenge is Business Transformation and Change Management. Taking a critical look at business process and policies and implementing change requires great resolve and a significant commitment of all levels of employees. Senior Leadership must be on the forefront of the effort and provide clear vision.