

Optimizing Public Works Operations

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The APWA Leadership and Management Committee introduced a series of articles entitled "The Road to Excellence" which focus on ten attributes and five keys to success based on the joint effort of professional organizations and the EPA to create a program that promotes effective utility management. Adjusting the list for public works professionals, each article looks at one attribute and key and why they are critical to an excellent organization. If you'd like to review the basis of the series, the introductory article was published in the December 2010 issue. Following is the final article in the series which addresses Operational Optimization.

Operational Optimization has many titles. Depending on the management concept du jour, Operational Optimization has been called:

- Management by Objectives
- Reengineering the Organization
- Continuous Improvement
- Deming's Plan-Do-Check-Act
- Six Sigma

and other similar variations on a theme.

From a nuts-and-bolts perspective, public works managers need to look at each of their activities periodically and ask:

1. What are we doing?
2. Why are we doing business this way? and
3. How can we do better?

Usually, these questions get asked when a new manager takes charge or when an agency goes through APWA's accreditation process. Too often, these

questions don't get asked at all and "business as usual" prevails.

An interesting case study occurred in one of APWA's member agencies. The Public Works Agency (PWA) described below is a 700-person full-service agency supporting a medium-sized city.

Question 1 – What are we doing?

Among PWA's many responsibilities is maintenance of the City's 1,300 vehicles and 300 major pieces of equipment. Fleet and equipment maintenance is funded through an Internal Service Fund (Equipment Fund) through which each department is billed its prorated cost of fleet and equipment maintenance. Several years ago, the Equipment Fund had a negative fund balance of over \$15M.

Question 2 – Why are we doing business this way?

Sakichi Toyoda of the Toyota Motor Corporation theorized that the question "Why?" had to be asked at least five times before the true nature of the problem became clear. So:

1. WHY was there a negative fund balance in the Equipment Fund? Expenses exceeded cost recovery.
2. WHY was the current cost recovery methodology used? The methodology had not been changed for so long that no one remembered the basis for cost recovery.
3. WHY wasn't the current methodology recovering costs?

No one knew. However, employees knew that PWA was paying \$3.80 per gallon but billing customers \$2.80; that the Fire Department was not paying for fuel costs for fuel delivered directly to fire stations; that costs of vehicle leases were not being recovered; and that each Police Department sedan was being billed at eight times a regular sedan.

4. WHY these discrepancies? Previous administrations did not allow true costs incurred by the Equipment Fund to be billed to other departments.
5. WHY not? City revenues from property taxes and sales taxes were not keeping pace with increasing expenditures. Allowing full cost recovery for the Equipment Fund would have required additional cuts in Police, Fire, Libraries, Parks, etc.

Question 3 – How can we do better?

1. Determine the true costs of doing business. Using actual maintenance costs for each vehicle and piece of major equipment, staff determined "vehicle equivalencies (VE)", with a sedan equaling 1 VE. Because of their round-the-clock usage and based on actual "wrench hours," Police sedans required 3.5 VE in maintenance costs (not the 8 VE previously used). On the other hand, costs of maintaining the over-age street sweepers increased dramatically.

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2. Calculate the true costs for each customer. Based on the number of assigned vehicles, each department was billed monthly for their actual costs. Briefings were held for each department head to show how much each vehicle was costing them and why. Departments were encouraged to turn in underutilized vehicles.

Results

1. Over 200 underutilized vehicles were turned in and sold at auction.
2. The General Fund realized a savings of over \$1M.
3. Council approved purchase of six new street sweepers.
4. Eight equipment maintenance positions were reduced through attrition.

5. The negative fund balance of the Equipment Fund was reduced to \$10M, with a plan in place to achieve a positive fund balance within six years.

Conclusion

This example shows both the dangers of "business as usual" and the benefits of optimizing service delivery by continually questioning whether a better, more cost-effective approach is available. The same process is now being applied to the City's Facilities Fund and the Sidewalk Repair Program. Additional programs will be scrutinized once these two are done. Once all programs are optimized, the entire process will be repeated.

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The ten attributes:

- Community Sustainability
- Product/Service Quality
- Customer Satisfaction
- **Operational Optimization**
- Financial Viability
- Infrastructure Stability
- Self Assessment
- Stakeholder Understanding and Support
- Operational Resiliency
- Employee and Leadership Development

The five keys to success:

- Leadership
- Strategic Business Planning
- Measurement
- Organizational Approach
- Continual Improvement Management Framework