

Applying CMMS to Budgets

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CMMS Information

- Specific Parts & Equipment
- General Supplies and Tools
- Personal Protective Equipment
- Vendor Contact
- Warranty Details
- Material Costs

CMMS Information

- Work Procedures
- Safety Precautions
- Preventive Maintenance Frequency
- Person(s) Performing Work
- Work Performed
- Corrective Maintenance History
- Labor Costs

CMMS as a Tool

- Asset Management Tool
 - Track resource costs to maintain an asset
 - Physical (parts, equipment, general supplies)
 - Human (person-hours to perform work, labor costs)
 - Document work required to maintain an asset
 - Periodic preventive maintenance
 - Incidental corrective maintenance
 - Excessive corrective maintenance
 - Budget planning and decision-making

Budgets

- Capital Project Budget
 - Major asset rehabilitation or replacement
 - Typically longer-term planning & significant costs
- Operation and Maintenance (O&M) Budget
 - Ongoing costs to operate & maintain assets
 - Subject to annual changes in costs for goods & services

Capital Budget

- Initial Purchase Cost
 - Often the center of attention for policy-makers
 - Want to approve the lowest capital (purchase) cost option
- Priority of Asset
 - “Worst-first”
 - Service considerations & stakeholder engagement
- Competing Asset Management Needs
 - Competing needs for limited funding
 - Consequences of deferral

Other Capital Budget Considerations

- Useful Life of Asset
 - All assets are not necessarily created equal
 - Resources needed to sustain the asset
- Standardization of Asset Types
 - Ease of O&M due to staff familiarity
 - Economy of scale for parts & supplies
- Business Case Based on Life-cycle Costs
 - Life-cycle costs should be basis for decisions
 - Need to educate policy-makers to approve the lowest life-cycle cost options

Capital Purchase Decisions

- Life-cycle Cost Calculation
 - Useful Life
 - Capital Costs
 - O&M Costs
 - Interest Rate
 - Standardized Cost Options
 - Annualized cost
 - Present worth

Life – Cycle Cost

COSTS	UNIT	QUANTITY	UNIT COST	TOTAL COST
<i>CAPITAL COSTS</i>				
Digester Tanks (egg-shaped) ¹	Gallons	4,000,000	\$3	\$12,000,000
Mixers	--	2	\$50,000	\$100,000
Heat Exchangers	--	2	\$110,200	\$220,400
Miscellaneous (piping, access)	--	2	\$887,500	\$1,775,000
Gas Storage	Cu. Ft.	50,000	\$12	\$600,000
Gas Compression, Transmission	--	2	\$125,000	\$250,000
Generator	KW	500	\$1,000	\$500,000
Contingency at 30 percent	---	---	---	\$4,633,620
TOTAL CAPITAL COSTS				\$20,079,020
ANNUALIZED CAPITAL COSTS²				\$1,570,716
<i>OPERATION AND MAINTENANCE COSTS</i>				
Annual Operation and Maintenance Costs	KW-hr	4,124,500	\$0.03	\$103,200
Contingency at 10 percent	---	---	---	\$10,320
TOTAL ANNUAL O+M COSTS				\$113,520
TOTAL ANNUAL CAPITAL AND O+M COSTS				\$1,684,236
SAVINGS				
<i>ENERGY PRODUCTION</i>	KW-hr/day	11,300	--	--
Annual Reduction of Energy Costs	KW-hr	4,124,500	\$0.06	\$247,500
ANNUAL COSTS LESS REDUCTION OF ENERGY COSTS				\$1,436,700
Notes:				
1 - Digester tanks (2-2 million gallon tanks) sized based on minimum 20 days residence time				
2 - Based on 25 year service life at 6% interest				

O&M Budget

- Ongoing Costs to Operate & Maintain Assets
 - Operating costs
 - Personnel
 - Utilities
 - Chemicals
 - Contracted Services
 - Materials & Supplies
 - Affected by annual changes in costs for goods & services

O&M Budget

- Ongoing Costs to Operate & Maintain Assets
 - Maintenance costs
 - Personnel
 - Parts & supplies
 - Preventive maintenance
 - Corrective maintenance
 - Contracted services
 - Affected by annual changes in costs for goods & services

CMMS Asset Management Decisions

- Repair or Replacement Decision
 - Resource costs to maintain the asset
 - Physical (parts, equipment, general supplies)
 - Human (person-hours to perform work, labor costs)
 - Type of work required to maintain the asset
 - Periodic preventive maintenance
 - Incidental corrective maintenance
 - Excessive corrective maintenance

CMMS Labor Decisions

- Pending Work Orders
 - Allows for resource planning
 - Person-hours or full-time equivalents (FTE) needed
 - Availability of parts, supplies & equipment needed
 - Level of skills needed to perform work
 - Priority of asset repair

CMMS Labor Decisions

- In-house vs. Contracted Work Decisions
 - In-house work
 - FTE's available to perform work
 - Labor costs (burdened rate, overtime)
 - Skills & equipment needed to perform work
 - Schedule
 - Contracted work
 - Contract management & administrative costs
 - Lump sum contract cost
 - Time & materials contract cost
 - Schedule

CMMS O&M Budget Decisions

- Inventory of Parts & Supplies
 - How often is it needed?
 - How many pieces of equipment utilize it?
 - Cost of having it on the shelf
- Storage Considerations
 - Space required
 - Required environmental conditions
 - Life of part
 - Delivery time

Applying CMMS to Budgets

- CMMS helps you to predict:
 - Required staffing levels
 - Life-cycle costs
 - Appropriate inventory levels
- CMMS helps you to decide:
 - Repair vs. replacement
 - In-house vs. contracted work
- CMMS gives you:
 - Factual basis for decisions
 - Documentation to support your position

CMMS Challenges

- Need CMMS Champion(s)
 - Knowledge of CMMS to provide required budget information
 - Able to train appropriate staff to use CMMS routinely
- CMMS Usage
 - Determine level of detail for information to be included in CMMS
 - Determine level of CMMS usage by various staff

QUESTIONS

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