

Situation Appraisal Municipal Infrastructure

“Balancing the Budget?....
Surviving the next 3 decades”

Hypothetical Case Study

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Situation Appraisal Definition and Applications

● Getting Priorities Clear!

- *Situation Appraisal*
 - separate, clarify and prioritize
 - **Senior managers/engineers or Policy Makers**
 - Confusion, unclear, or priorities overwhelming
 - Creates understanding of priorities through to resolution
- Example Applications:
 - **Conflicting fiscal, environmental and public priorities,**
 - High potential risk factors,
 - Crisis management, Complex Assessments
 - Prioritization of budgets





Case Study for Today.....Let's examine the hypothesis that a financial dilemma exists today in many rural communities

- 1 **Introduce the "Situation Appraisal" Theme**
- 2 **Municipal Infrastructure "Life Cycle & Replacement \$"**
- 3 **Design of Utility Rate Base Charges**
- 4 **Appraisal and Solutions**



1. Case Study for Today "The Situation Appraisal"

- Budget experience in Rural Communities indicates:
 - Conflicting fiscal, environmental, and public priorities exist
 - Cash Shortfalls, declining infrastructure
 - Rising/changing standards
 - Public Health and Environmental Obligations
 - Adverse Public Opinion to rising costs/rising expectations
- Due Diligence Principals for Decision Maker
 - Test of Scrutiny by our "PEERS"
 - Protection of Public Health
 - Protection of the Environment
 - Preservation of Capital



2. Background Municipal Infrastructure “Life Cycle”

- **Treatment and Management Systems**
 - Potable Water, Life Cycle
 - Wastewater Treatment
 - Landfill, recycling depot,
 - **Life Cycle, 15 to 50 years**
- **Underground Infrastructure**
 - Water Distribution
 - Pipe, Valves, Curb Stop Valves, Fire Hydrant
 - Wastewater
 - Lift Stations, Manholes, Pipe, Sanitary Services
 - **Life Cycle, 35 to 75 years**
- **Building Infrastructure**
 - Municipal Buildings
 - Shop, Office, Recreational Facilities, Library, etc
 - **Life Cycle, 25 to 60 years**
- **Surface Infrastructure**
 - Roadways, Street Signs, Traffic Lts. & Controls
 - Curb and Gutter, Culverts, Storm Water Systems (Ponds/ Ditches)
 - **Life Cycle, 50 to 75 years**



2.1 Background Municipal Infrastructure “Life Cycle & Replacement \$” Potable Water System (Hypothetical)

Example Infrastructure Component 1

Potable Water Reservoir, Consists:

- Reservoir
- Pumping Station
- Fire Pump System
- Main Distribution Header
- Current Age: 30 years
- Eng Life Cycle: 25 - 50 years

Typical Rural Life Cycle: 35 to 60 yr
Est Cost -New Const- \$2.8 M

Hypothetical Major Infrastructure Component 3

Potable Water Distribution, Consists:

- Underground Piping
- Isolation Valves
- Water Services
- Fire Hydrants
- Current Age: 20-60 years
- Engineered Life Cycle: 75 years

Typical Rural Life Cycle: 50-60 years
Estimated New Cost \$5.0 M

Major Infrastructure Component 2

Potable Water Treatment Plant, Consists:

- New Building
- WTP, Chemical Disinfection
- Controls and Analyzers
- Current Age: 40 years
- Eng Life Cycle: 20-25 yrs

Typ Rural Life Cycle: 25 to 30 yrs
Est New Cost -\$2.0M

Summary of Potable Water Infrastructure

- Water Reservoir
 - 50% of Useful Life is over
 - Cost of Replacement \$2.8 M
- Water Treatment Plant
 - Useful Life is Over
 - Cost of Replacement \$2.0 M
- Water Distribution Piping
 - 70% of Useful Life is over
 - Cost of Replacement \$5.0 M

Total Replacement Cost \$9.8 Million
0 to 30 years of life cycle left



2.2 Background Municipal Infrastructure “Life Cycle & Replacement \$” Wastewater System (Hypothetical)

Example Major Infrastructure Component 4

Treatment Lagoon, Consists:

Sewage Lagoon
Lift Station, Force main
Current Age: 25 to 40 years
Eng Life Cycle: 25-50 yrs

Typ Rural Life Cycle: 35 to 60 yrs
Est New Constr- \$3.0 M

Summary of Wastewater Infrastructure

Wastewater Lagoon
50% of Useful Life is over
Cost of Replacement \$3.0 M
Wastewater Collect Piping/Lift Station
>70% of Useful Life is over
Cost of Replacement \$4.0 M

Total Replacement Cost \$7.0 Million
0 to 30 years of life cycle left

Major Infrastructure Component 5

Wastewater Collection, Consists:

Underground Piping and connections
Manholes
Individual Services
Current Age: 30-60 years
Eng Life Cycle: 35-75 yrs

Typ Rural Life Cycle: 50-60 yrs
Est Cost -New Construction +4.0 M

Other Infrastructure

Roadway, 75% worn
Estimated Cost \$6.0 M
Buildings and Structures, 65% Worn
Estimated Cost \$4.0 M
Recreational Facilities, 80% worn
Estimated Cost \$3.0M

Total Replacement Cost \$13.0 Million
10 to 30 years of life cycle left



2.4 Background Municipal Infrastructure “Life Cycle & Replacement \$” Current Infrastructure Assessment

- Underground Surface Facilities badly aged
- High Cost anticipated next 0-30 yrs
- Financial Planning Needed
- Risk Management Based Solutions needed...innovation/flexibility
- Cash Flow Requirements will increase..... dramatically soon....
- Financial Planning needed...
 - “Legacy Financing”



3.0 Background Municipal Infrastructure “Life Cycle & Replacement \$” Design of Utility Rate Base Charges

Current Strategy Used

Operating Costs

Operating Labor
Administrative Labor
Chemical and Power Costs

Maintenance Costs

General consumables
Breakdown maintenance
Preventative maintenance

Debenture Costs

Costs of loans are passed directly onto the user

Charges Not Implemented

Depreciation charges

As asset depreciates over time, monies collected to allow future replacement.

Long term assets cause financial risk if an asset replacement strategy is not properly accounted in the rate base.

Long Term Implications Serious

Profit and Inflation

Profit/inflation based upon the residual equity remaining in the asset (after depreciation).



3.1 Municipal Infrastructure “Life Cycle & Replacement \$” Design of Utility Rate Base Charges Current Assessment of Utility Charges

- Operating, maintenance & debenture costs only
- No provisions for depreciation, inflation or profit
- **Public Opinion extremely opposed** to increase in costs
- Long Term Capital Upgrade Provisions Never practiced,
 - Time line too short now for longer term assets,
 - **Financial risks exist**
- Grant program
 - Developed to provide **relief** and logical funding of **purely municipal assets**
 - **Already Generous** compared to other Countries and Provinces (Reality Check)
- Historical Charges - do not reflect true costs,
 - **Past** residents –**subsidized** utility
 - **Future** residents – will **subsidize** utility



4.0 Municipal Infrastructure "Life Cycle & Replacement \$" Situation Appraisal

Business Case

- **Suggests assets & business are at risk!**
 - Under financed assets with upside revenue potential
 - 1st life cycle in Canada, not entirely surprising
 - Biggest Risk Factor, Lack of Reserves for Future Liability

Infrastructure is wearing out

- "Engineered Life" -large \$ liability 20-30 years time frame
- Some critical components will break down over period
- Catastrophic/breakdown maintenance strategy unacceptable policy for water/wastewater

Difficult Financial Situation-

- recovery 40-60 yrs of depreciation & inflation in 20-30 yrs,
 - Will Require Innovation/Creativity,
 - Fundamental change in public understanding/knowledge base is important
- 3-10 years impossible
- Legacy Financing

Rising costs are Political Unfavorable



4.0 Municipal Infrastructure "Life Cycle & Replacement \$" ...Possible Solutions.....

■ Adopt Rate Base Utility Charges

- Increase Utility Costs – Key Solution – Fair Solution
- Operate as a "Rate Based" utility
 - Charge Depreciation, Inflation and Profit
- Maximum Grant Opportunities
 - Foster Relationships

■ Master Development Plan

- Major Asset replacement strategy
 - yrs 10, 20 and 30 with equity and debt

■ Evaluate/Expand Balance Sheet Liabilities

- "Legacy Financing",
 - build up capital reserves
 - Present Worth Contribution for Future Liabilities



4.0 Municipal Infrastructure "Life Cycle & Replacement \$" ...Possible Solutions....

- **Delay, Delay, Delay the cost of depreciation**
 - Major Asset Replacement Strategy/plan
 - Target critical/high risk areas of operation
 - Innovation, cost reduction ideas
 - Advanced Operating plans/strategies
 - Extend operating time line
- **Begin the Process to Reverse Public Opinion**
 - Family Cycle
 - Historical Perspective of Infrastructure
 - Long Term Policy, 10 to 20 years



4.0 Municipal Infrastructure "Life Cycle & Replacement \$" ...Possible Solutions....

- **Cooperation between Municipalities**
 - Cost Reduction Opportunities
 - Operation, Maintenance, Engineering
 - Administrative, Regulatory simplification
 - Capital Pooling, may be important
 - Political Advantages, Granting, Policy
 - Increase in charges - "A" political



Solutions in Action

- Town of Black Diamond
 - Operating Cost Controls
 - Target High Risk Infrastructure
- Vermillion River Regional Consortium
 - Cooperation between Municipalities