Storyline:

Tom's Very Bad Day –

A Step-By-Step Approach To Applying Advanced Asset Management To A Utility Environment

---

Narrator: Prologue

It is twilight. Night is coming on fast. A light rain is falling; the temperature is in the 40's. Tom is standing in the mud in an over-grown field looking at his Jones Street lift station. Raw sewage is flowing out of the pump station and across the street. An old pick-up truck has slid in the flowing sewage, swerved off the road and has hit the power pole up at the corner. The power is out. The police have been called and are starting to direct traffic. Tom is expecting a reporter to show up at any moment with a camera crew. Small electric generators are adding their whine to the din as temporary lighting is being hooked up.

His emergency response crews are standing about with glum faces. The crew is waiting for an electrician who knows how to connect a large generator up to the pump station's motor control center. The generator has not yet arrived. While they wait, they would like to connect their small gas powered pumps up to the force main to divert the sewage from the storm drain, but the piping connections can not be found and the right fittings are not in inventory back at the warehouse. June, the Field Super, calls Red, the local plumbing supply store owner, and asks the owner to open his store to furnish the fittings.

Meanwhile the size of the violation builds as the sewage flows into the storm drain and from there into the river. Tom winces as he notes to himself that the river is the sole water supply for Anders, a small downstream community. To make matters worse, Tom just got a radio call advising him that AgriCrop, an up-stream local industry – the major employer in the area – has just reported wastewater backups.

This, unfortunately, is the fourth major failure of a pump station in 18 months. Each of the other three failures resulted from equipment failures – an electrical problem in a control panel in one case, and a variable speed drive failure in another. The third failure resulted from the rupture of a section of the force main from a 50 year old pump station. Each of these failures resulted in significant wastewater spills into storm drains that connect to the river. Two also caused wastewater backups into businesses and homes – both of which made the six o'clock news!

Tom has been a City employee for 16 years. He joined the City as a Supervisor, was promoted to Plant Manager after 5 years, and has been the

Utility Director for just under 3 years. The City Manager that promoted Tom retired shortly thereafter, and the new City Manager's performance will be evaluated and the renewal of his employment contract will be addressed by the City Council in about 6 months. Both the City Manager and Tom took heat from the City Council about the two most recent pump station failures. Some Council members have asked why the utility maintenance program is not what it should be, and one even proposed that an outside management audit be conducted so the City could "fix its utility management problems."

The City's utility rates are reasonably competitive, and the City Council is proud of the fact that they have "held the line on rates" for four straight years. At a recent City Manager staff meeting, the Finance Director expressed concern that utility system failures may adversely impact the bond rating for a key bond issue planned for next year. The treatment plants for which Tom is responsible have been meeting permit requirements, but the Plant Managers have submitted CIP project requests for significant additions, modifications and replacements and have justified these on the basis of unit age and anticipated permit requirement changes.

Tom has noticed an appreciable increase in the number and severity of sanitary sewer overflows in the collection system, and is concerned about SSO & CMOM compliance. He is also concerned that enforcement actions are looming as a result of the previous pump station failures. Since he became Director, Tom has been limited to annual O&M budget increases that merely added minor inflation allowances to previous year's budgets. Thus far, his requests to the Budget Director for capital improvement projects have faired pretty well – due largely to the fact that they were small, he suspects - but additional projects will likely trigger the need for rate increases.

Tom knows that he is "under the gun," and that this lift station failure will serve to "turn up the heat." Tom's discussion with the City Manager early the next morning confirms this. Following that discussion, Tom calls an ad hoc staff meeting where he demands answers. Unfortunately, all he gets is more bad news.

The maintenance budget for this year is already 12% over-expended – with two months to go before the fiscal year ends. This emergency will likely put the whole department in the red. On top of that, his two most senior field people are leaving – one just won the lottery, the other is taking early retirement due to illness.

Tom has a sleepless night. It's been a bad month. In fact, if the truth were known, it's not been such a hot couple of years. Tom realizes that things are simply getting out of hand. It's clear that he and his team are simply not in control of the system – events are overrunning him and his management team. He knows he must take action, or he is certain that someone else will. But what action? He finally nods off thinking, "We can not keep doing things the same old way and expect different results… and I can not be the first person to ever

face and solve these kinds of problems. I've got great people… but our infrastructure keeps failing…!"

There must be a better way of running a utility!

Narrator: The Core Advanced Asset Management Questions

The morning after the lift station overflow, Tom calls an old college colleague, Ashley Jackson, who manages a large beer brewery in the private sector. They meet for lunch and Tom spills his guts about his problems. Ashley suggests he look into incorporating some concepts of advanced asset management, which is what she is doing. Tom is puzzled. He's heard the term, asset management, but not had time to really look into it. She sketches some of the fundamental concepts, and stresses the benefits of "long-term sustainability", the management of "business risk", and managing on the basis of "lowest total life-cycle costs". He's intrigued. She describes where she is going in her own asset management initiative at the brewery, then promises to e-mail him a set of five core questions that she uses to guide her asset management decision-making. He spends some time that afternoon studying the five questions she has sent:

Core Question 1: What is the current state of my assets?

Core Question 2: What is my required "sustainable" level of service?

Core Question 3: Which assets are critical to sustained performance?

Core Question 4: What are my "minimum life-cycle-cost" CIP and O&M strategies?

Core Question 5: Given the above, what is my best long-term funding strategy?

Show next PowerPoint slide (Agenda) - Core Question 1

Q1. What Is The State Of My Assets?

Tom is struck by the realization that his assets are actually being "consumed" in the day to day generation of services – that is, in achieving the mission of the Utility, he is literally "using up" his assets. He has never thought of it that way before. He realizes that, unlike Ashley, he has no idea of what his real "consumption rate or costs" are – how fast his plant and pipe are being used up. And, more importantly, that without such information he is running blind. "No wonder events are overrunning me!"

He suspects that his level of reinvestment is wholly inadequate. He putters around and locates the annual financial statements sent over last year by Finance and runs some numbers. His calculations show that the Utility currently reinvests less than one-half of one percent of the "book value" of the utility's assets each year. This means, he suddenly realizes, that at a ½ percent per year rate, he anticipates his assets lasting 200 years!

"It's no wonder the performance of my system is diminishing even though I'm spending more and more on maintenance – mostly emergency maintenance at that! But I need better facts to confirm this if I am to have any chance to make a case for increased reinvestment.

"To really understand what it costs to provide services, I have to know what assets I have and where they are. Then I have to know what their remaining useful lives are – that is, what condition they are in."

Tom starts to see, albeit sketchily, that the real issues here are *management* issues – an integration of engineering science with more advanced management concepts than what he has been accustomed to. As the Utility Manager, his role in the organization is really more about *managing* his assets rather than just "*engineering*" them.

Tom realizes his immediate data collection effort actually divides into two core efforts:

- systematically documenting what we have, where it is, and what condition it is in, and
- Understanding the actual consumption rate of our assets, or, more fundamentally, their true remaining useful value.

Once he has real data about each, he can then better determine where to send his maintenance people, when to repair and when to replace, and which assets to renew, build or acquire. He senses that he has just taken a major step into new territory – a different way of thinking.

Q1a. What Do I Own And Where Is It?

Tom starts with defining what assets he has. He already knows that collecting data is expensive.

"What data do I really need? What data do I have? How do I organize my data so that it feeds my information and knowledge needs?"

Tom goes searching for data about his assets. To his dismay, he discovers data stacked haphazardly in piles and boxes. No systematic data record or data base exists. He has no single, current listing or register of what he owns. Worse, what data he does have does not "fit together" - his GIS data does not "fit" with his CMMS data which does not tie to Finance. And much of the information he depends on is "mortal" data – in the heads of his most experienced people. He sees the real issue is one of silos – everyone has a "different piece of the elephant!" "We've got to find a way of getting the right information to the right person, in the right format, at the right time if we want to make good decisions.

NARRATOR Passes to ROGER.

Principles Discussion and Exercises	
Key Points	**Associated Techniques**
• We have to know what we have before we can manage appropriately what residual life is left. • Everything in AM starts with the Asset Registry. • The "data standard" is the key building block for AM asset registries.	• Asset registry/inventory • Data standards, asset hierarchy • System maps • Delphi approach to locating other sources of data • Process diagrams • "Handover" procedures

Tom writes out a data standard, an asset hierarchy and a record layout.

While reflecting on the data structure he has developed, he realizes he must integrate "his" data standard with those of his senior management team. In fact, he starts to see that information integration and roll-up are vitally important! All of the silos in the organization need to have access to the same data and have the same knowledge about the Utility's assets.

Q1b. What Condition Is It In And What Is Its Remaining Physical Life?

Now that he has a data hierarchy and record layout - a data standard - how best to collect the data – especially condition data? Tom runs the numbers and discovers that getting all the condition data for all of his plants and pipes is hugely expensive. But he has to move forward or be stuck forever in a reactive mode. How to do that?

Tom begins to see an "onion" approach to his data collection efforts. The key lies in deciding which assets are most critical to keeping the system running -

perhaps he should focus his limited resources on those most critical assets first, then work his way through increasingly less critical "layers" or groups of assets until he has the data he really needs. By using this very simple, "high level" risk analysis, Tom can assign a "first cut" asset criticality value to each of his assets or groups of assets - which will subsequently guide where to focus his data efforts.

He does this in a collaborative manner with his operations, finance, maintenance and engineering managers gathered around a table over a process schematic of his plant and pipe system. They use colored drafting dots to create a "measles map" of system failures and critical assets. He settles on a simple "good, fair and poor" condition scale as a starting point.

DOUG passes to ROGER

Principles Discussion and Exercises	
Key Points	**Associated Techniques**
• Condition assessment must be guided by the same core concept that guides all AAM – the likelihood and consequences of failure • Condition assessment rating scales must project remaining useful life to be useful for decision-making	• Condition analysis • Condition rating

Tom suspects that these risk and "failure analysis" concepts will guide much more than just data collection efforts. As he and his management team grow in their understanding of advanced Asset Management, he can drill into lower levels of detail (he pictures the onion) as relevant.

Tom and his team assign criticality levels and adopt a data collection work plan.

Q1c. What Is The Value Of My Assets?

Now that he has his data structuring and gathering efforts underway, Tom turns to the second question the CM asked him at lunch – what will it cost to keep his system running given their condition?

"How much have we consumed over the years - more importantly, what is left to work with? Most importantly, what will it cost to sustain the performance of those assets – at a level that his NPDES permit requires?"

How can he assess the impact on his business of repeated failures if he has no feel for the value of his existing system or the cost of those failures to his business?

The word “valuation” pops into his head. Tom recalls his City Manager at last week’s staff meeting talking about a new accounting requirement that requires the City to disclose the value of all of its assets for the first time. Tom knows that his counterpart at Public Works is quite concerned because he, for the first time, has to determine the value of all of the City’s roads, streets, sidewalks, bridges, stormwater culverts, traffic signs – anything that has a useful life of more than one or two years. Tom calls the CM and the Finance Director to see if they are available for lunch. He wants to understand how this focus by the new accounting rules can help him manage his own assets.

At lunch, the Finance Director says that the City will actually show an item called “depreciation” as an annual expense on its annual financial statements. Tom vaguely recalls from his college days that depreciation is a concept used in the private sector to fund the renewal or replacement of assets. He asks how this works. The Finance Director says that it’s really rather simple: the City will take the historic cost of all of its assets and divide that cost by the asset’s useful life in years. The amount that results from the division is called the “depreciation expense”. This amount is to be treated as an annual expense, just like payroll or the purchase of cylinders of chlorine. The difference is, that because the depreciation expense is not actually paid to someone, it “frees up” cash for the City to reinvest in its assets. At least, that’s how it works in the private sector, he says.

The CM does not sound particularly convinced. He knows that the Utility, as an “enterprise fund,” has been using depreciation for years. Yet the condition of its assets is not exactly top notch. He asks Tom to compare the Utility’s annual depreciation expense, as reflected in the City’s Annual Report, to what the Utility’s replacement and renewal needs really are. An interesting idea, thinks Tom; he commits to get right back to the CM.

Tom returns to his office. He notes that to do what the City Manager has requested, Tom needs two things: 1) the dollar amount of annual depreciation and 2) an estimate of what it will take to renew and replace his assets over their life.

He starts with finding the depreciation expense first. He recalls that his latest Financial Statements reflect a dollar value for his assets. Once again he digs through his shelves until he locates a copy of last year’s Annual Financial Report. He turns to the Balance Sheet and sees a dollar number listed as the “book value” of his assets. What exactly does the term “book value” mean? More fundamentally, how is it calculated and what does it mean from a management standpoint? Can it help him figure out how much he should be reinvesting in his system to sustain performance at the level his Council set, given that he is using up his assets a little bit every day?

The disclosure notes section of the Financial Report says that the value listed is based on “depreciated historic cost.” What does “depreciated historic cost” really mean? He digs out his old engineering economics textbook from his college days. It says that “depreciated historic cost” means the original cost of

the asset divided by its useful life. Original cost – what the Utility actually paid at the time it bought or built the asset. Well, that's simple enough, he reflects.

"But wait a moment - many of my assets are decades old!" The more he thinks about it, the more he realizes that with long lived assets, historic depreciation is virtually meaningless from a management view. He figures that what the Agency paid for an asset fifty years ago, given the rise in the cost of things since then, can tell him little that is important about managing that asset today.

Clearly, assets that were built or acquired years ago have historic costs that are far below what it would cost to renew or, most certainly, to replace the asset. "If I have lots of old assets – which I do," he notes, "then my annual depreciation 'allowance' is most assuredly far below what I need for actual replacement purposes. Wouldn't information about *replacement* cost be far more relevant to the decisions he needs to make? Shouldn't I be focusing on replacement cost instead of depreciated historic cost? And what about *renewal* costs versus *replacement* costs? Those would seem to be significantly different numbers themselves.

"If I am spending more on emergency maintenance to continually repair my problem assets than it would cost to renew or replace them," he reasons, "then I am wasting my very limited budget dollars. I had best get a handle on the renewal and replacement costs of my assets," Tom concludes. Tom tracks down his old Engineering Economics text book again and takes it home for some late night reading.

NARRATOR Passes to DUNCAN.

Principles Discussion and Exercises	
Key Points	**Associated Techniques**
• Asset valuation is the "common benchmark" against which the decision to repair, renew or replace is made. • Historic depreciation has little relevance to long lived assets where the management intent is to preserve the asset	• Valuation and costing o Renewal costing o Replacement costing o Depreciated replacement cost o Deprival cost

Tom initiates a renewal and replacement costing effort with the City's finance personnel and his engineering and maintenance staff.

It dawns on Tom that knowing the residual life of his assets and their associated renewal and replacement values is only half of the question – the other half is, "at what level am I to sustain the performance of the system?" This leads to a contemplation of the relationship between the ***cost*** of delivering service to

customers (given his system's actual remaining useful lives) and his system's expected ***performance*** - "level of service" Ashley called it. He sees a clear connection – *the higher the level of service, the higher the cost to sustain it.* It dawns on him that the relationship between sustained level of service and the cost of that service has never been clearly presented to the City's Executive Management Team – much less to the City Council.

Tom now understands the importance of knowing the remaining physical life of his assets. But he also realizes that he can't understand whether their performance will be adequate unless he understands the performance that they need to achieve – and to sustain - over time. It occurs to him that he needs to set some performance criteria – some "levels of service."

Next PowerPoint slide (Agenda) - Core Question 2

Q2 What Is My Required Sustainable LOS?

Now that he understands the importance of defining a level of service, how to do it? What are the different aspects or "dimensions" of LOS? Tom starts with thinking that defining his current LOS will be simple – he need only to look at the most recent NPDES permit. As he reflects, though, he becomes aware of the distinction between *system performance* (the technical or physical performance of the system - what he typically thinks of as service) and *serviceability* – that is, what his customers and stakeholder think of the service.

It is also clear that what his City Manager and City Council set as levels of service standards must be both measurable and routinely measured. Finally, he recognizes that the standards set for the organization as a whole must somehow be linked to - no, literally *bound* to the performance of each individual asset. That is, that the strategic level targets must be directly connected to the operations level, if the targets set by the Board are to be met and sustained.

NARRATOR hands over to Lynn.

Principles Discussion and Exercises	
Key Points	**Associated Techniques**
• LOS is the "collection of measurable attributes or characteristics of the product delivered" where the product adds value to the customer • LOS is most useful in a long term perspective - "sustainable LOS". • LOS is ultimately defined by customers & regulators through the agency's Policy Board. • System performance and customer satisfaction ("serviceability"") are related but separate concepts. • LOS is directly related to the cost of service and the level of acceptable business risk. • LOS is best measured across a range of balanced measures. • Staff and Board should be involved in determining LOS, but it is not *necessary* that the Board be involved if they prefer not to be.	• Customer demand analysis • Regulatory requirements analysis • Level of service statements; LOS "roll-up" hierarchy • "Balanced scorecard" • Asset functionality statements • AM Charter

Tom and his team develop an LOS statement for consideration by his Policy Board along with a workshop on the “Over-arching Policies;” he starts his folks on asset performance standards.

Next PowerPoint slide (Agenda) - Core Question 3

Q3 Given My System, Which Assets Are Critical To Sustained Performance?

Now that he has his arms around his data needs and has defined his target levels of service, Tom starts reflecting on what "proactively" managing his assets is all about – how it differs in a big way from simply responding to failures.

Tom's reflection leads him to conclude that good asset management is about successfully managing the *potential* for assets to fail. How do assets fail? Is there a way to understand the management of asset failure? His quest takes him back to Ashley, his beer-plant counterpart, who points him to an area called "root cause analysis". She gives him several books on a subject called "failure mode, effects and criticality analysis" – FMECA, she calls it.

His reading carefully distinguishes between the likelihood of failure and the consequences of failure. That is, not all assets fail the same way and not all failures have the same consequences for the Utility in terms of revenue loss, compliance with regulatory requirements, and customer satisfaction. He begins to see that the failure of the Jones Street lift station has impacts on his business that are much greater than the narrow – albeit painful - repair costs incurred and the grumbling of his crews.

NARRATOR hands over to Roger.

Principles Discussion and Exercises	
Key Points	**Associated Techniques**
• Not all assets fail the same way. • Not all assets have the same likelihood of failure. • Not all assets have the same consequence of failure. • Understanding failure drives acquisition, maintenance and renewal management decisions. • Although good information is better, asset "decay curves" need not be highly detailed to be useful. • LOS at the strategic level must be directly connected to asset performance statements at the operations level, if AAM is to work.	• Failure analysis ("root cause" analysis; failure mode, effects and criticality analysis; reliability-centered analysis) • Risk/consequence analysis • Asset list by criticality code • Failure codes • Probability of failure • Business risk exposure • Asset functionality statements • Asset "decay curves" • Asset-unit level management plans and guidelines • Asset knowledge

Tom takes a lift station through a failure mode analysis and into a business risk exposure assessment (risk-consequence analysis).

Tom is intrigued with this concept of managing asset failure. He recalls that his Jones Hill lift station can still pump effluent at the rate it was originally designed to do, but it simply can not keep up with the additional demand placed on it by the recently constructed Whispering Oaks subdivision. If one point stood out clearly from his review of the failure literature, it was that *physical failure* is quite different from *functional failure*! Functional failure – the failure to sustain performance at the targeted performance level of the asset – can precede physical failure by many months - or even years.

Next PowerPoint slide (Agenda) - Core Question 4.

Q4 What Are My "Minimum Life-Cycle Cost" CIP And O&M Strategies"?

It only takes several evenings of reading for Tom to see that "failure mode" and "risk-consequence" concepts have real ramifications for Maintenance, Operations - even Engineering.

Tom brings his O&M and Engineering teams together for a skull session about failure modes, effects, and criticality analysis – FMECA - concepts. The Staff get interested, even excited, about how this changes what work they should be doing and how they can move in a structured way into condition-based maintenance rather than just flailing away at reactive maintenance. Operations begins to understand why Maintenance does what it does. And Maintenance sees better how it impacts the availability of service when it takes down a pump. Both agree there is much room for improving availability of service and reliability. Operations even indicates it looks forward to redefining some of its roles with Maintenance. Engineering sees a better way to plan for rehab and renewal projects in their CIP and sees that small strategic redesigns can make both operations and maintenance costs significantly lower.

In the course of the review of the Jones Street lift station using risk-consequence concepts, June, the Maintenance Super, states that it may be about time to renew the lift station rather than to keep repairing it. Tom is startled to realize that he has no clear method for determining when to repair and when to replace, having just used "judgment" in the past. It occurs to him that replacing too early or repairing too late in the asset life-cycle is just wasting bucks – and he has precious few of those to waste. So just how does one really know when to repair and when to replace - how to determine when the correct point in time is at hand?

That evening he comes across an article in a trade journal that describes an Australian approach called "optimal renewal decision making". He reads the article, sits back in contemplation, then calls Ashley to see if she will assist his team in applying the concept to the lift station.

Shift to Roger.

Principles Discussion and Exercises	
Key Points	**Associated Techniques**
• Follow a logical best practice process – ORDM or LCCA. • Get the best information & data you have, consider all alternatives, and generate your best strategy. • Consider non-asset solutions! • Review your work to determine the 'confidence level' you have in it – good practices plus good data lead to high confidence decisions! • Decide to proceed or defer based on the risk it represents to your agency. • For those projects you defer, undertake the necessary analysis to lift the confidence level to where you feel good about proceeding.	• Optimal renewal decision-making • Life-cycle costing • Condition/performance residual life by criticality • Condition-based monitoring plans and deployment • Failure response plans • Capital "cost compression" strategies • Operating "cost compression" strategies

Q4a. Using AAM To Drive The CIP

Now that the team is more comfortable with renewal decision-making, Tom shifts his focus to the big ticket item on his plate – his CIP needs.

Tom knows he has a far bigger CIP list than he can afford to fund. He suspects it is more a compilation of separate wish lists than a balanced needs list. He is sure that the failure/risk-consequence techniques he has developed are key here too, but suspects there is even more at work. It dawns on him that to make tough decisions about which projects to invest in - and which not to – he must clearly understand the *demand* for his assets; that is, he must understand why his customers need his services and how that need is likely to change over the next decades. What *are* the core forces driving his customers?

He is thankful that his earlier work on setting up data standards and getting better data about what he owns gives him a better basis to make the tough CIP decisions that lie ahead.

Tom starts systematically assembling a realistic CIP from the bits and pieces of requests scattered here and there. As he works he realizes that many of the projects simply are not ready to go forward to his Board for consideration. Indeed, even worse, if they did go forward, he would be liable to get his head handed to him, because the projects simply have not been reviewed from a "big picture" perspective. Some of them are even contradictory in nature – like upsizing the lift station downtown when flow (demand!) there is already falling,

and is likely to fall for years! He starts reflecting on what *he* would want to know if he were a City Council member before he felt comfortable in agreeing to fund a specific project.

In his head, a checklist – more specifically, a set of "decision filters" – begin to emerge. He jots down a set of notes, then takes a project through the "filters" to test his idea. As he puts all his projects through the filters, he begins to sort the projects into those that are defensible, those that are not, and those that are premature at this time. This last group of projects he'll need to know more about before they can be allowed to proceed.

Pass to Duncan and Doug

Principles Discussion and Exercises	
Key Points	**Associated Techniques**
• *Strategic* validation of the CIP is key to a "best-value", defensible CIP • The quality of the CIP development process and the quality of the data available determine the level of confidence that can be assigned to the CIP • A good CIP requires a Strategic CIP Business Plan to fit funding to projects	• CIP strategic validation process • Strategic CIP Business Plan

Ashley helps Tom and his EMT put together a CIP using the AAM "filters".

Q4b. Using AAM To Drive O&M Decisions

As Tom is reviewing his quarterly budget reports, he hears a knock at his door. It's June, his maintenance manager. She says she has been working with the maintenance crews and they have a question for him: she reads from a legal pad: "What exactly does 'fair' or 'poor' mean from a maintenance standpoint? Should she and her crews keep all assets at fair or better level of maintenance?" If so, then she needs more resources. And a few of her crew have mumbled that some of the assets that are in fair condition seem to be fine for the foreseeable future.

NARRATOR passes to ROGER

Principles Discussion and Exercises	
Key Points	**Associated Techniques**
•	•

Over a cup of coffee, Tom reflects on how much more comfortable he feels with how and where his crews are being deployed. Good crews doing the wrong work (or doing the right work at the wrong time) has arguably been the single biggest surprise during his pursuit of AAM. It seems so clear, now. He shudders at what has been spent over the decades with the best of intentions but in the absence of good decision processes and solid data. It dawns on him that the whole process, indeed all advanced Asset Management, boils down to "confidence in decision-making" – in short, having confidence that the decisions being made are in fact the very best long term decisions that can be made. More importantly, he sees that confidence is really the result of interaction between just two variables – good practices (which starts with asking the right questions) and good data.

Next PowerPoint slide (Agenda) - Core Question 5.

Q5 What Is My Best Long-Term Funding Strategy?

In his office, Tom kicks back and reflects over the past three months. Things are starting to come together – there is at least a glimmer of hope on the horizon that he and his staff may finally get on top of the "failures beast". Which, he chuckles to himself, sure as heck beats being trampled underfoot.

As he reviews his management team's progress with the principles of AAM, it occurs to him that his approach so far has dealt a lot with *individual* assets. What of the big picture – how does it all fit together, especially financially? More to the point, what funding level would it take to sustain performance of the Utility over the long haul? The concept of a "big picture" is rather "heady". How to identify a long term funding level for asset renewal that sustains his target LOS? And how would he ever be able to explain it to his City Manager, much less his Council?

NARRATOR hands over to DUNCAN.

Principles Discussion and Exercises	
Key Points	**Associated Techniques**
• "Full economic cost" is the foundation concept from which effective financial decision making is made. • Replacement and renewal cost, not historic depreciation, is key to good financial decision-making • "Long-term Annualized Renewal Annuity" provides the baseline funding for sustained performance. • Telling the asset consumption "story" in simple, effective, big-picture terms sets the stage for LOS and business risk decision-making.	• Valuation techniques • Over-arching financial impact analysis • Optimized replacement cost tables • Optimized financial strategy • Total Asset Management Plan • Telling the story with confidence

(Exercise vignette here involving the CM, Tom, the Finance Director and the Public Works Director and the determination that 1) depreciation won't cut it and 2) all City assets are really in the same "decision-pot" and a "whole-of-business" perspective is needed.)

Tom roughs out an annuity renewal level and notes how better data will give him more and more confidence in setting and adjusting the level. At the request of the CM, he starts developing renewal and replacement costs for all City assets, so that the City can begin the process of confronting its future – likely to be a contentious and painful process given the years of "deferred maintenance"

across the City. And the CM has asked Tom to be thinking of how the City would put together its first Asset Management Plan.

Assembling the "Big Picture" View

The insight about confidence in decision-making deriving from good practice and good data has been a major break-through in his own mind. He realizes that what he has been doing over the past several months is to build a paradigm, a management framework for thinking about his assets, while at the same time building a library of "best practices". He now wants to put it all together into a package.

How do the pieces fit together as a whole? Can it all be "boiled down" to a simple framework or working model that he can "pin on his wall"?

Principles Discussion and Exercises	
Key Points	**Associated Techniques**
• AM focuses relentlessly on providing sustained performance at the lowest life-cycle cost to the organization. • AAM is both a way of thinking and a set of specific practices. • The more we understand about our assets, the better we can mange them. • Understanding our assets starts with asking the right questions.	• The Total Enterprise Asset Management Plan • The Total Enterprise Asset Management Improvement Program • Best AAM Practices • The Five Core AAM Questions

Back to Duncan

As Tom reflects on his "big picture" model, feeling a little smug about it all, a colleague, Michelle Davis, CEO of a neighboring utility, calls to inquire of his approach, having heard interesting things through the grapevine. She asks how Tom went about it, or more fundamentally, what lessons did he learn that, if he were to do it all over, he would build on?

We leave Tom and his world at this point. But Michelle's question to Tom sets the stage for the next session – what are the key factors in developing and successfully deploying an advanced asset management program? Indeed, what lessons have we learned?

Next PowerPoint slide (Agenda) - Discussion/Q&A etc.