

# **Asset Management at the Lansing Board of Water and Light**

**Asset Management Seminar**

**May 3, 2017  
East Lansing, Michigan**

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# Why are we formalizing our Asset Management Program?

Knowledge Retention - 30% of workforce is eligible for retirement

Regulatory Compliance - AMP required by January 1, 2018

Security - Get a better handle on system vulnerabilities

Getting the most out of our existing assets

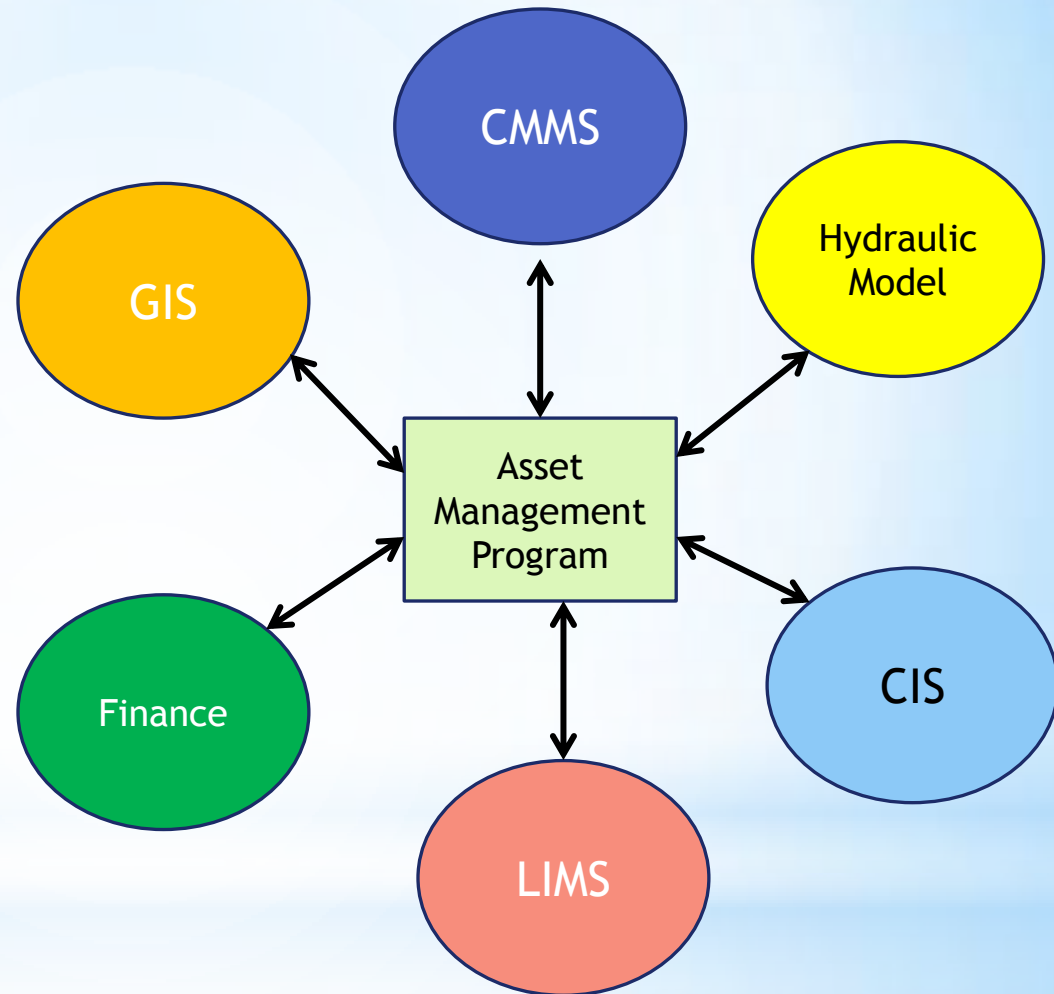
- Focus on proactive maintenance versus reactive
- Risk reduction



# Where does all the data come from?

In some cases these are simply paper records or simple spreadsheets. In other cases these can be multi-million dollar software solutions.

Asset Management is not a piece of software but rather a philosophy about how a utility should manage its assets. The software applications are simply a means of managing the complex information needs for an effective program.



# Just How Big is the Problem?



8,026 main segments reflecting 789 miles of distribution main.

Another 40+ miles of transmission mains and sludge lines.

8,400 valves.

56,400 Services with another more than 800 miles of pipe to maintain.

6,090 Fire Hydrants.

2 Water Treatment Plants with 8 pumping facilities with a combined 1,300 assets.

SCADA/ Pressure Monitoring Stations/ Control Valves/ Interconnections. Etc.

# Here's the scary part !

## What is our replacement cost?



829 Miles of main at an average replacement cost of \$200 per foot is: \$875,434,000

If we add in the services with 56,400 services at an average replacement cost of \$4,000.00 per service we have another \$225,600,000

In 2010 the consultants concluded that the cost to replace just our water treatment plants at \$168,000,000

Add the cost of our well field at \$250,000 per well and that adds \$30,000,000

Add it all up and the cost to completely replace our system is nearly **\$1.3 Billion dollars.**

# Barriers to Implementation

- Staff wearing many hats
- Not supported by Management
- Financial Challenges
  - lack of rate increases
  - elected officials not raising rates
  - Access to capital money, bond limits
- Most infrastructure is buried and costly to conduct condition assessment
- Technology Challenges – what tools to use for what.
- Creating a data monster – how do you maintain it
- Working with the public to define levels of service and what changes to the levels of service will cost. Customers are demanding more but their willingness to pay for the necessary upgrades is low.
- Affordability
- Just another in a long list of things to do to properly run a water utility.





## Will you meet the deadline?

All community water supplies serving more than 1,000 people are required to implement an AMP by January 1, 2018.

Supplies shall include in the general plan each of the following:

- A summary detailing the system used to maintain an inventory of assets. Priority shall be given to an inventory of source, treatment, pumping, and distribution system assets.
- A summary describing the method used to assess the criticality of assets considering the likelihood and consequence of failure.
- A statement of level of service goals.
- A capital improvements plan that identifies waterworks system needs for 5-year and 20-year planning periods.
- A summary detailing the funding structure and rate methodology that provides sufficient resources to implement the asset management program.

# Step 1

- A summary detailing the system used to maintain an inventory of assets. Priority shall be given to an inventory of source, treatment, pumping, and distribution system assets.

## •Source Water

## •Water Treatment

## •Water T & D

## •General Plant

## Asset Information - GIS (Small World)

Water Main Database. Information gathered includes:

- Life Cycle Status (in service, abandoned, etc.)
- Product (finished, sludge, raw, etc.)
- Ownership
- Diameter
- Material
- Pressure Class
- Joint Type
- Acquired (No, Landel)
- Installed Sketch Number
- Installation Date
- Work Order Number





## Step 2

- A summary describing the method used to assess the criticality of assets considering the likelihood and consequence of failure.

Level of Service Goal	No Impact (1)	Moderate Impact (3)	Critical Impact (6)	Catastrophic Impact (10)
<b>Comply with all Water Quality Regulations.</b>	Technical Violation only of permit or regulation.	Violation is reportable but no enforcement action necessary.	Regulatory agency issues a violation warning.	Significant non-compliance resulting in an administrative consent order.
<b>Provide High Quality, Reliable Customer Service.</b>	Pressure > 35 psi No service Interruption Adequate fire protection	Pressure > 25 but < 35 < 20 Customers interrupted Low impact on fire flow	Pressure > 20 but < 35 20-50 customers interrupted High impact on fire flow	Pressure < 20 psi Widespread customer outage < 500 gpm fire flow
<b>Public, Employee Health and Safety</b>	No adverse health affects.	Minor injury to public or employees. No illnesses reported.	Severe injury to public or employees. Illnesses reported.	Loss of life of public or employees. Widespread illness reported.
<b>Economic Impact on Utility or Community</b>	No economic impact on community. Utility costs are covered by normal budget funding.	Minor or short -term impact on community. Utility costs may require budgetary adjustment.	Significant economic impact on community. Utility costs may require additional resources.	Long-term community economic impact. Utility costs require borrowing.
<b>Ability to Restore Asset to Design LOS</b>	Restoration completed in < 4 hours.	Restoration requires > 4 hours but < 12 hours.	Restoration requires > 12 hours but < 24 hours.	Restoration requires > 24 hours.
<b>Location/Critical Facility Impact</b>	Open space.	Residential and small commercial.	Residential, extensive commercial (malls), Industrial complexes, wholesale customers.	High density residential, schools, hospitals, government facilities, wholesale customers.

“Sample Data”

# Step 3

- A statement of level of service goals.

<b>Level of Service Goal</b>	
<b>Comply with all Water Quality Regulations.</b>	Compliance on all current regulatory requirements as well as identification of potential risks for pending or future regulations.
<b>Provide High Quality, Reliable Customer Service.</b>	Focus will be on meeting current minimum pressure and fire flow requirements as defined in the planning criteria and engineering design guidelines.
<b>Public, Employee Health and Safety</b>	Goal is to have no injuries or illnesses. This will apply to public and employees. Follow all regulated safety issues as well as internal safety policies and procedures.
<b>Economic Impact on Utility or Community</b>	Economic impact on businesses or community should be evaluated including both tangible and intangible costs. Utility costs will be evaluated in terms of budgetary impacts or requirements for additional funding sources.
<b>Ability to Restore Asset to Design LOS</b>	The focus on this should be on un-planned outages. Planned outages can be handled with proper communication with affected customers.
<b>Location/Critical Facility Impact</b>	All customers are important but the potential risks increase with population service density or with sensitive customers.

# Step 4

- A capital improvements plan that identifies waterworks system needs for 5-year and 20-year planning periods.

<u>Project ID and Title</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>
General Water System Improvement - Projects	\$200,000	\$250,000	\$300,000
Water - Street Reconstruction	\$300,000	\$300,000	\$300,000
CSO Inelligible - Main and Service Replacement		\$700,000	\$1,700,000
CSO Required Water Reconstruction - SSRF Eligible		\$240,000	\$700,000
Purchase, Install and Scrap Water Meters	\$160,000	\$140,000	\$110,000
General Water System Improvements - Hydrants	\$250,000	\$250,000	\$250,000
General Water System Improvements - Large Valves 14"+	\$50,000	\$50,000	\$50,000
General Water System Improvements - Small Valves 12" and less	\$250,000	\$250,000	\$250,000
General Water System Improvements - Large meter setting replacements	\$60,000	\$60,000	\$60,000
Water Main Replacement - Victor from Pleasant Grove to Deerfield			
Water Main Replacement - Denver from Cedar to Lyons		\$175,000	\$260,000
Water Main Replacement - Reo MLK to Pleasant Grove		\$500,000	\$750,000
Non-specific Annual Water Main Replacements			
Dump Box for #112	\$6,000		
New Excavator	\$0	\$230,000	
Filter press #1 plate refurbishment.	\$826,000		
Calciner basement piping replacement	\$0	\$308,000	
Dye Pump Room Refurbishment	\$0	\$630,000	\$620,000
Annual Annual capital wellfield	\$40,000	\$50,000	\$50,000
Annual Annual equipment removal	\$24,000	\$30,000	\$30,000
Annual Annual raw water supply mains	\$12,000	\$15,000	\$15,000
Water Main Replacement - N Grand River	\$1,524,000		

# Step 5

- A summary detailing the funding structure and rate methodology that provides sufficient resources to implement the asset management program.

## Cost of Service Analysis

**Exhibit 1**  
**Functionalization and Classification of Plant In-Service (Rate Base)**

Acct. No.	Account Description	Total As of 6/30/2015	Main System (Base 1)	Main System (Base 2)	Main System (Base 3)		Main System (Base 4)		Main System (Base 5)		Weighted Tot.	Risk Protection (PP)	Revenue Related (RR)	Direct Assignment	Risk of Classification
					Capacity (CAP 1)	Capacity (CAP 2)	Capacity (CAP 3)	Capacity (CAP 4)	Capacity (CAP 5)						
301.0	Organization	10	0	0	0	0	0	0	0	0	0	0	0	0	0
302.0	Franchises and Concessions	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>Total Intangible Plant</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Source of Supply</b>														
210.0	Land and Land Rights	87,191	80,122	0	0	0	0	0	0	0	0	0	0	0	0
211.0	Structures & Improvements	17,301	16,882	0	0	0	0	0	0	0	0	0	0	0	0
214.0	Water and Sewer	1,534	1,485	0	0	0	0	0	0	0	0	0	0	0	0
216.0	Supply Water	8,515	84,126	0	0	0	0	0	0	0	0	0	0	0	0
224.0	Water Pumping Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225.0	Electric Pumping Equipment	16,877	316,271	0	0	0	0	0	0	0	0	0	0	0	0
226.0	Other Water Source Plant	4,444	2,667	0	0	0	0	0	0	0	0	0	0	0	0
	<b>Total Source of Supply</b>	<b>134,318</b>	<b>625,518</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>Water Treatment</b>														
311.0	Structures & Improvements	912,377	3,193,888	50	35,520	50	50	50	50	50	50	50	50	50	50
322.0	Water Treatment Equipment	15,448	82,711	0	0	0	0	0	0	0	0	0	0	0	0
	<b>Total Water Treatment</b>	<b>927,825</b>	<b>3,276,600</b>	<b>50</b>	<b>35,520</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>
	<b>Transmission &amp; Distribution</b>														
342.0	Distribution Reservoirs	1,818	1,818	0	0	0	0	0	0	0	0	0	0	0	0
343.0	Distribution Mains	12,758	12,758	0	0	0	0	0	0	0	0	0	0	0	0
345.0	Service	19,666	19,666	0	0	0	0	0	0	0	0	0	0	0	0
346.0	Meters	7,218	7,218	0	0	0	0	0	0	0	0	0	0	0	0
347.0	Meter Installation	4,422	4,422	0	0	0	0	0	0	0	0	0	0	0	0
348.0	Appurtenances	0	0	0	0	0	0	0	0	0	0	0	0	0	0
352.0	Structures and Improvements Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>Total Supply, Treat., &amp; T&amp;D Plant</b>	<b>927,825</b>	<b>3,276,600</b>	<b>50</b>	<b>35,520</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>
	<b>General Plant</b>														
390.0	Structures and Improvements Gen	822	8174	35	86	1175	2274	89	66	8635	1149	89	89	89	89
391.0	Office Furniture	129	129	0	0	0	0	0	0	0	0	0	0	0	0
391.0	Office Equipment - Computer	208	208	0	0	0	0	0	0	0	0	0	0	0	0

## Financial Statements

**Page 4**  
**LANSING BOARD OF WATER AND LIGHT**  
**STATEMENT OF CHANGE IN NET POSITION**  
**WATER**  
**June-16**

Water	Category	Account	YEAR TOTALS		%
			Current YTD	Prior YTD '15	
<b>Water</b>					
<b>Construction</b>					
1	Residential	CCF	2,714,360	2,703,241	(41,700)
2	Commercial	CCF	2,750,491	2,780,491	5,000
3	Industrial	CCF	581,290	596,398	(15,108)
4	Municipal	CCF	2,170,434	2,173,858	(3,424)
5	Other Classes	CCF	82,644	16,544	66,100
	<b>Total CCF Sales</b>		<b>8,391,219</b>	<b>8,370,532</b>	<b>20,687</b>
<b>Operating Revenue</b>					
1	Residential		6,384,394	6,224,528	(159,866)
2	Commercial		6,302,283	6,330,328	(28,045)
3	Industrial		1,954,314	1,988,107	(33,793)
4	Municipal		3,955,891	3,975,121	(19,230)
5	Other Revenue		1,848,175	5,635,258	(4,787,083)
	<b>Total Operating Revenue</b>		<b>20,755,057</b>	<b>21,867,342</b>	<b>(1,112,285)</b>
<b>Operating Expense</b>					
1	Production		8,836,305	8,324,308	(511,997)
2	Transmission and Distribution		2,258,256	2,124,308	(133,948)
3	Maintenance		1,823,532	1,818,308	(5,224)
4	Administration		2,055,954	2,062,511	(6,557)
5	Administrative and General		16,215,783	16,055,021	(160,762)
6	Depreciation and Amortization		8,802,384	8,85,343	(82,959)
	<b>Total Operating Expense</b>		<b>30,534,214</b>	<b>30,215,719</b>	<b>(318,495)</b>
	<b>Operating Income</b>		<b>10,220,843</b>	<b>11,651,623</b>	<b>(1,430,780)</b>
<b>Nonoperating Income (Expense)</b>					
1	Investment Income		391,134	271,891	119,243
2	Other Income		103,188	25,318	77,870
3	System Capacity Fee		170,382	167,344	3,038
4	Shared O&M (net of capex)		(1,174,434)	(1,058,525)	(115,909)
5	Amortization - Cost of utility capex		(274,270)	(105,558)	(168,712)
6	Return on Equity		(2,386,842)	(2,248,822)	(138,020)
7	Other Interest Expense		(2,235)	(4,364)	2,129
	<b>Total Nonoperating Expense - Net</b>		<b>(1,676,087)</b>	<b>(1,883,471)</b>	<b>207,384</b>
	<b>Change in Net Position (Net Income)</b>		<b>8,544,756</b>	<b>9,768,152</b>	<b>(1,223,396)</b>

## Rates - Fees and Charges



### RESIDENTIAL WATER SERVICE RATE NO. 1

**Availability** - This rate is available to any single-family residence or multifamily dwelling of 4 units or less served by one meter.

**Monthly Rate** - Shall be computed in accordance with the following charges.

**Basic Service Charge:** per customer per month or part thereof:

Meter	11/1/14
5/8"	\$12.20
3/4" *	\$17.08
1"	\$31.76
1 1/4" or 1 1/2"	\$70.82
2"	\$124.52

**Commodity Charge:** per ccf of water used per month;  
\$2.79

# What does the Future Hold?



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A person wearing a dark suit and a light-colored shirt is holding a rectangular white sign with both hands. The sign has the word "QUESTIONS?" written on it in a bold, dark, sans-serif font. The background is a light blue gradient with a faint, large, light-colored circular graphic behind the person.

**QUESTIONS?**