

Village of Carol Stream

Special Workshop Meeting of the Village Board

FY 18 Budget Workshop #2-Water/Sewer Fund and other Funds Introduction to Small Cell Antennas

Carol Stream Fire Protection District-Station 28
365 Kuhn Road, Carol Stream, IL 60188

March 6, 2017

6:00 p.m. – 7:48 p.m.

Meeting Notes

ATTENDANCE:

Mayor Frank Saverino, Sr.
Trustee Rick Gieser
Trustee John LaRocca
Trustee Mary Frusolone
Trustee David Hennessey
Trustee Matt McCarthy
Village Clerk Laura Czarnecki

Joseph E. Breinig, Village Manager
Bob Mellor, Assistant Village Manager
Mark Talavera, Information Tech. Dir.
Ed Sailer, Police Chief
Jon Batek, Finance Director
Phil Modaff, Public Works Director
Jim Knudsen, Engineering Services Dir.
Caryl Rebholz, Employee Relations Dir.
Don Bastian, Community Development Dir.
Tia Messino, Assist. to the Village Manager
Ron Roehn, Supt. of Operations
Rocky Patel, IT Engineer

The meeting was called to order at 6:00 p.m. by Mayor Frank Saverino, Sr. and the roll call read by Village Clerk Laura Czarnecki. The result of the roll call vote was as follows:

Present: Mayor Frank Saverino, Sr., Trustees Hennessey, LaRocca, Gieser, Frusolone and McCarthy

Absent: Trustee Schwarze

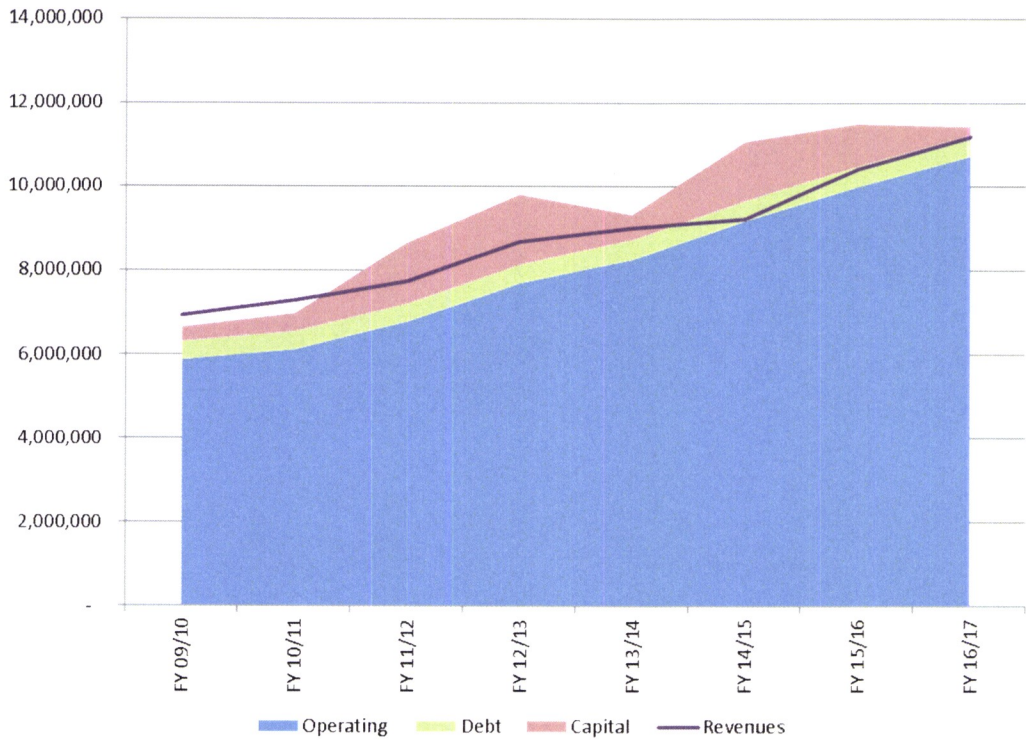
FY18 Budget Workshop #2-Water/Sewer Fund and other Funds

Finance Director Jon Batek discussed the water and sewer fund and other small fund budgets as follows:

Water & Sewer Fund-FY17/18

- Enterprise Operation. Cost of providing service is covered by rates charged to users of the Water and Sanitary Sewer systems. 95% of all revenues come directly from water/sewer rates.
- Funding used exclusively for Water/Sewer operating and capital costs (no subsidies from General Fund or other funds).
- Rates must be set to cover day to day system operating expenses as well as provide for current and future capital replacements and rehabilitations.

**Water & Sewer Fund
Expenses by Type vs Revenues**



**Water & Sewer Fund
Reserve Levels**

Cash balances have declined in 7 of the last 8 years

FY09/10	\$ 16,636,976	\$ (136,734)
FY10/11	17,371,358	734,382
FY11/12	16,869,569	(501,789)
FY12/13	15,424,480	(1,445,089)
FY13/14	14,903,910	(520,570)
FY14/15	13,280,883	(1,623,027)
FY15/16	11,744,504	(1,536,379)
FY16/17 est.	11,501,817	(242,687)

Spend-down of reserves over 8 years = \$5,271,893

Use of reserves for Capital is an appropriate use, however cannot be sustained indefinitely

April 30	Cash Balance	Change in Cash Balance	Minimum 25% Operating Reserve	Balance Available to Capital
FY09/10	16,636,976	(136,734)		
FY10/11	17,371,358	734,382	1,651,212	15,720,147
FY11/12	16,869,569	(501,789)	1,644,500	15,225,069
FY12/13	15,424,480	(1,445,089)	1,960,064	13,464,416
FY13/14	14,903,910	(520,570)	2,188,833	12,715,078
FY14/15	13,280,883	(1,623,027)	2,442,614	10,838,270
FY15/16	11,744,504	(1,536,379)	2,769,845	8,974,659
FY16/17 Est.	11,501,817	(242,687)	2,769,845	8,731,972
FY17/18 proj.	7,463,751	(4,038,066)	2,916,517	4,547,234
FY18/19 proj.	4,943,204	(2,520,547)	3,019,137	1,924,067
FY19/20 proj.	1,577,429	(3,365,775)	3,130,194	(1,552,765)

**Water & Sewer Fund
Historical Perspective Recap**

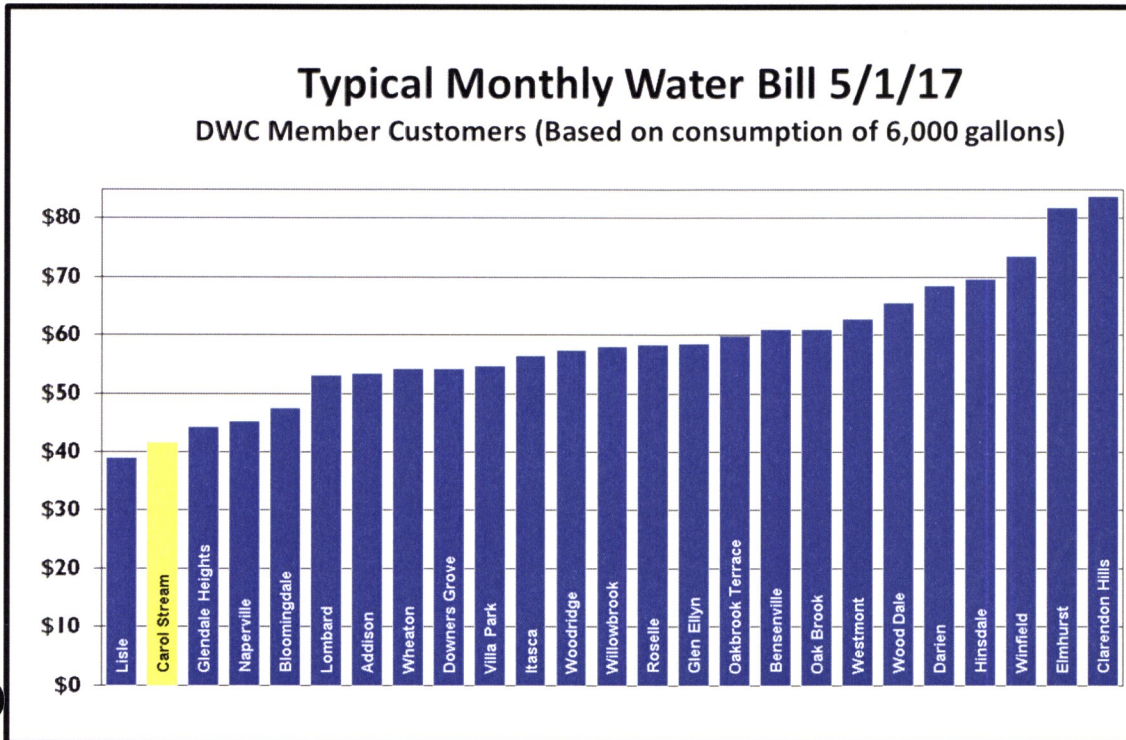
- Water Costs have had the most notable impact on Fund performance.
- We have drawn from reserves in each of the last 6 years to complete Capital Projects without replenishing.
- In the last 3 years, the Fund is not raising enough money to fully cover Operating Expenses + Debt. No new reserves are being generated for future Capital Projects.
- Based on the current proposed budget, cash reserves available for Capital Projects will be reduced to zero within the next 3 years and the Water & Sewer Fund will be unable to meet the policy minimum 25% Operating Reserve.

**Historical Water Rates
2012 to 2016**

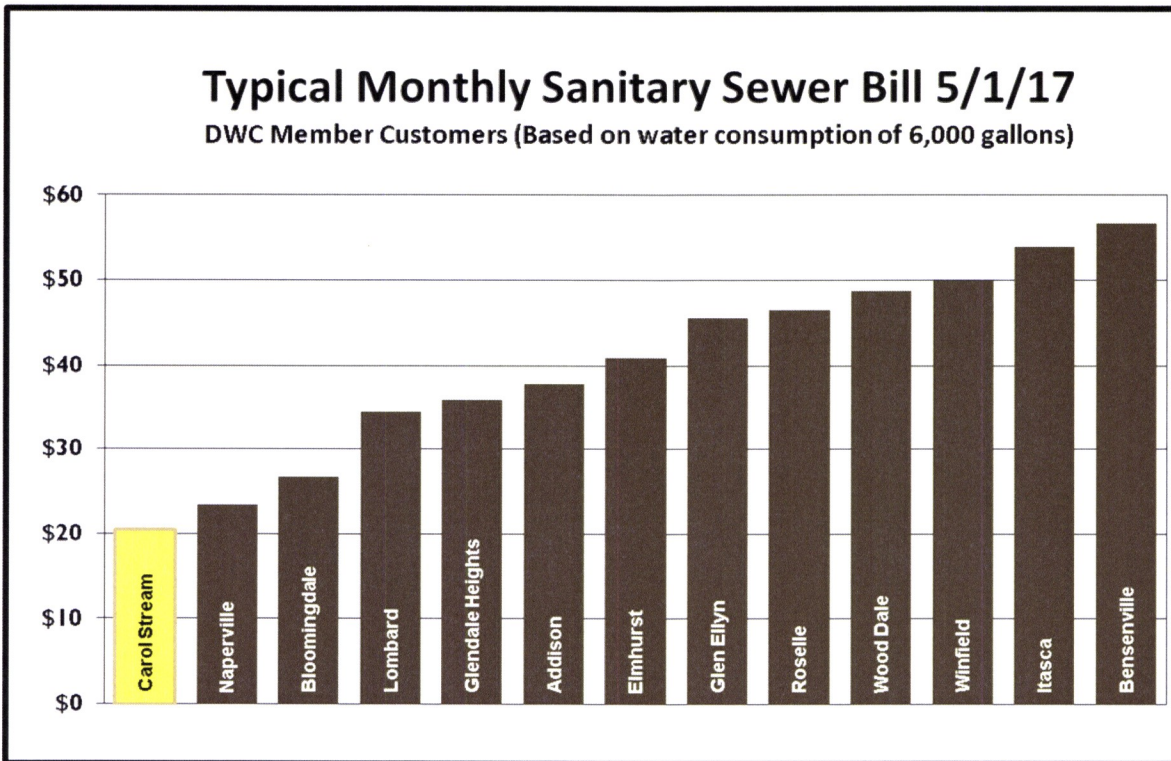
Date	Chicago Charge to DWC			DWC Charges to Municipalities				Carol Stream Charges to Customers			
	Rate	\$ Inc.	% Inc.	Variable	Fixed	Total	\$ Inc.	% Inc.	Rate	\$ Inc.	% Inc.
5/1/2011	\$ 2.01			\$ 2.04	\$ 0.26	\$ 2.30			\$ 4.09		
1/1/2012	2.51	0.50	25%	2.73	0.26	2.99	0.69	30%	4.78	0.69	17%
1/1/2013	2.89	0.38	15%	3.32	0.26	3.58	0.59	20%	5.37	0.59	12%
1/1/2014	3.32	0.43	15%	3.97	0.26	4.23	0.65	18%	6.02	0.65	12%
1/1/2015	3.82	0.50	15%	4.68	0.26	4.94	0.71	17%	6.73	0.71	12%
5/1/2015	3.82	-		4.85	-	4.85	(0.09)	-2%	6.73	-	0%
5/1/2016	3.82	-		4.80	-	4.80	(0.05)	-1%	6.93	0.20	3%
6/1/2017	3.90	0.08	2%	4.88		4.88	0.08	2%			

- During the 7 year period of Chicago / DWC rate increases, Carol Stream chose to restrict its increases in water rates to cover ONLY our added water purchase costs. During this time, rate increases did not cover increases in other operating cost areas or decreased water demand/sales.
- Beginning last year (5/1/16), due to declining reserves and the inability of rates to fully cover operating costs and debt, we proposed a multi-year effort to “right size” rates to enable operating cost coverage as well as plan for funding of future capital projects.
- Projected Chicago increase of 8 cents to DWC eff 6/1/17.
- Additional rate increases will be needed 5/1/17 and beyond.

**Water & Sewer Fund
Community Comparison – Water**



**Water & Sewer Fund
Community Comparison – Sewer**



**Water & Sewer Fund-Current Year FY16/17
Projected Performance**

FY16/17 REVENUES

- Billed consumption is up by 4.1% from May to December 2016 compared to 2015. We project this will continue through the end of FY16/17.
- 2 consecutive years of growth in billed consumption (FY16/17 est. 4.1%, FY15/16 actual 0.9%).
- Consumption appears to have stabilized somewhat compared to longer trend of general decline.
- Project total Fund revenues to be above budget by \$492,000 or 4.6%. This is also \$747,000 or 7.2% above FY15/16 actual revenues.

FY 16/17 OPERATING EXPENSES

	Budget	Estimated	%
	FY16/17	FY16/17	Budget
Salaries & Wages	1,379,423	1,337,352	97.0%
Contractual Services			
Water Commission	5,487,000	5,956,000	108.5%
WRC Contract	1,765,013	1,735,013	98.3%
All Other	<u>1,599,070</u>	<u>1,340,685</u>	83.8%
Total Contractual	8,851,083	9,031,698	
Commodities	361,370	360,133	99.7%
Debt	<u>487,504</u>	<u>487,504</u>	100.0%
TOTAL OPERATING	<u>\$ 11,079,380</u>	<u>\$ 11,216,687</u>	101.2%

FY16/17 EXPENSES

- Total projected Operating Expenses exceed total projected revenues of \$11.175M for FY16/17, creating a deficit before capital expenses.
- Net Fund Loss (before capital) of (\$41,687).
- With Capital added, Net Fund Loss for FY16/17 projected at (\$242,687).
- By comparison, our planned (Budgeted) Net Fund Loss for FY16/17 was (\$3,141,605).
- The most significant difference between projected and planned performance is the result of not completing the Schmale Road Water Main Project budgeted at \$2,278,000.

Water & Sewer Fund-FY17/18

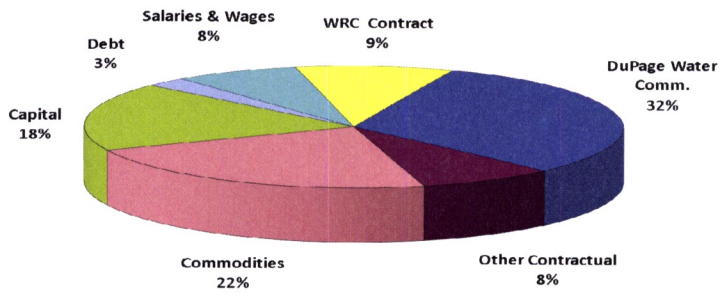
CURRENT AND PROPOSED 3 YEAR WATER & SEWER FUND BUDGET AND PLANNING HORIZION

- The draft budget/plan presently shows the fund impact using current water and sewer rates.
- We will discuss rate impacts/recommendations near the conclusion.

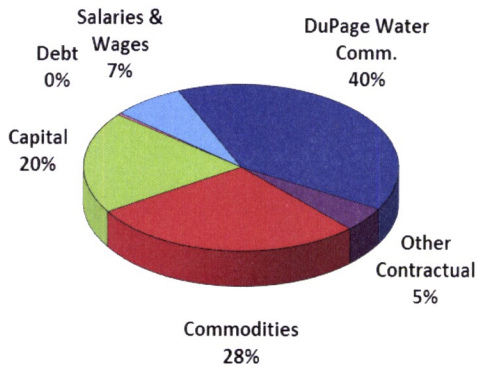
REVENUES

- Projecting water consumption at same level as FY16/17 estimate.
- This assumes billing of 1.089 billion gallons.
- Also assumed in FY17/18 is borrowing of \$4.13M to complete a comprehensive water meter replacement program which was evaluated during FY16/17 (discussed in more detail later).
 - Borrowing is now necessary to complete a capital program of this nature and scope.

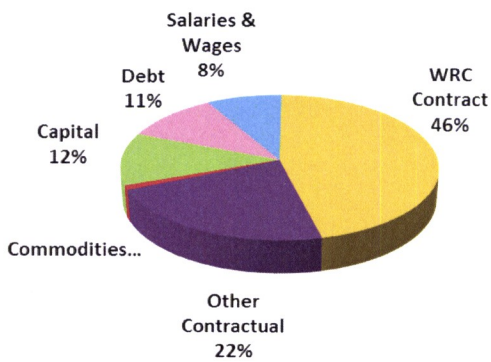
Water & Sewer Fund Proposed Expenses by Category FY17/18



Water Division



Sewer Division



Village of Carol Stream
Draft Water & Sewer Fund Budget Expenditures
FY17/18 Proposed Compared to FY16/17 Budget

	Actual FY15/16	Revised Budget FY16/17	Estimated FY16/17	Proposed Budget FY17/18	FY17/18 Proposed to FY16/17 Budget	
OPERATING COSTS						
Salaries & Wages	1,271,726	1,379,423	1,337,352	1,464,078	60,990	4.4%
Contractual Services						
Water Commission	5,662,812	5,487,000	5,956,000	6,080,000	593,000	10.8%
WRC Contract	1,714,093	1,765,013	1,735,013	1,831,000	65,987	3.7%
All Other	<u>1,051,236</u>	<u>1,599,070</u>	<u>1,340,685</u>	<u>1,600,007</u>	<u>937</u>	0.1%
Total Contractual	8,428,141	8,851,083	9,031,698	9,511,007	659,924	7.5%
Commodities	290,732	361,370	360,133	4,334,458	3,973,088	1099.5%
Debt	<u>94,195</u>	<u>487,504</u>	<u>487,504</u>	<u>486,523</u>	<u>(981)</u>	-0.2%
TOTAL OPERATING	10,084,794	11,079,380	11,216,687	15,796,066	4,693,021	42.4%
CAPITAL COSTS						
	<u>1,011,919</u>	<u>2,745,225</u>	<u>201,000</u>	<u>3,487,000</u>	<u>741,775</u>	27.0%
	<u>\$</u>					
Total	<u>11,096,713</u>	<u>\$ 13,824,605</u>	<u>\$ 11,417,687</u>	<u>\$ 19,283,066</u>	<u>5,458,461</u>	39.5%

*Includes proposed meter replacement program at \$4,130,000

Water & Sewer Fund-FY17/18
OPERATING EXPENSE HIGHLIGHTS

- No staffing changes from FY16/17.
- Cost of Water +\$593,000 (10.8%) compared to FY16/17 budget due to anticipated 8 cent Chicago/DWC increase on 6/1/17 plus increased consumption greater than budgeted in FY16/17.
- Commodities increase due to \$4.13M proposed meter replacement program following FY16/17 consultant study.
- Increase in Capital improvements of \$742,000 over FY16/17 (details on next page).

Water & Sewer Fund Capital Summary - FY17/18

Water System

Schmale Road Water Main Replacement	\$ 2,743,000 *
Vehicle Replacements	
Supervisor Vehicle F250 4X4	45,000
Backhoe Replacement	120,000
Other Equipment - Chlorine Analyzer + Locator	11,000
Water System Study	105,000 *
Total Water	\$ 3,024,000

Sewer System

WRC Grit Bldg. Roof Replacement	\$ 82,000
WRC Secondary Clarifier Improvement	100,000
Aztec Drive Sewer Lining	215,000 *
North Ave. Sewer Rehab. (design)	66,000 *
Total Sewer	\$ 463,000

Total Capital Improvement **\$ 3,487,000**

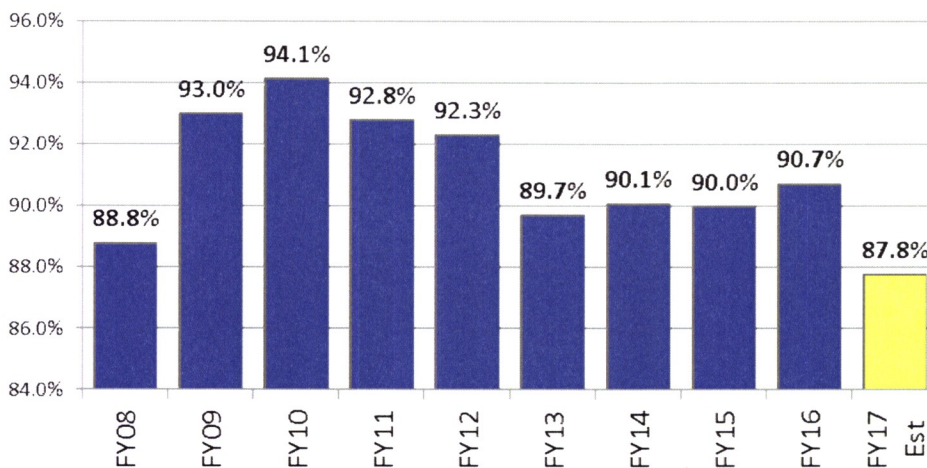
* Rebudgeted from FY16/17

Water Meter Replacement Program

Director of Public Works Phil Modaff discussed the water meter replacement program.

Consumption and Sales Trends

- Water consumption has seen a significant decrease in the last decade. This is seen in the **20.6% reduction in water purchased** from the DuPage Water Commission during that period.
- In addition, in that same period there is an average of approximately 9.1% difference in water purchased versus water sold.



Strategies to Address Loss

- Large meter (2" and larger) testing and replacement program
 - 239 (63%) have been replaced due to testing results OR due to age.
 - A sample (44) of replaced large meters yielded the following results when comparing recorded consumption over twelve month periods pre- and post-replacement:
 - Recorded consumption increased on average 37%
 - Recorded consumption increased overall by 24% (21 million gallons worth \$217,350)
 - Bi-annual, system-wide leak detection
- Quick response to any leaks found

Metering System Assessment

- Residential meters
 - Commissioned a consultant review of water metering system in 2016
 - Scope included:
 - Review inventory of meters and AMR's (style, age and potential loss due to age)
 - Review metering processes (Finance and Public Works)
 - Present a review of current meter technologies
 - Prepare an estimate of the cost of replacing residential meter stock

Metering Components (what we have)

- The traditional meter, called a volumetric meter, simply records the volume of water that passes through. No power source is necessary for the meter to operate
- Automatic meter readers (AMR) is a technology that serves as a one-way communication device that automatically collects data recorded by a meter and transmits it to a central database for analysis and billing purposes. AMR units are powered by batteries.
- Our meters are read via a "drive-by" vehicle (contractor) that captures transmitted data recorded by the meter and collected by the AMR device.

Metering Components (newer technology)

- Electromagnetic water meters have no moving parts, measuring the magnetic field in the measuring chamber to determine flow rates. Their measurements can be accurate to within 0.25 percent and are powered by newer battery technology that offers 20-year life span (10 years guaranteed and 10 years pro-rated in case of failure).
- Advanced Metering Systems (AMI) are an advancement over the one-way AMR systems. The two-way communication ability provides remote access to meter data. The data can aid in early intervention of billing issues and provide higher customer service levels:
 - On-request reads (eliminates need to send employee to read meter)
 - Remote software upgrades to meters
 - Remote meter diagnosis and tamper detection notices
- Remote meter reading – data transmitted by the meters to a tower and then to billing office, eliminates the annual (\$44,000) cost for a contractor to read meters.

Carol Stream Residential Meters

There are approximately 10,750 residential water meters (less than 2-inches) currently in service. Currently, over **7,000** of the meters installed in a residential environment are over **15 years old**.

Number of Meters by Age	
Age (years)	# of Meters
0 - 5	830
6 - 10	435
11 - 15	2495
16 - 20	4778
20+	2217

Carol Stream Residential AMR's

AMR's are the devices that collect the data recorded by the meter and transmit the data to the meter reader. These devices are powered by batteries with varying life expectancies between 8 and 12 years (due to improvements in battery technology).

Currently, over 5,600 of the AMR's installed in a residential environment are over **15 years old**. And another 3,500 are between 11 and 15 years old.

Number of AMR's by Age	
Age (years)	# of Meters
0 - 5	938
6 - 10	643
11 - 15	3518
16 - 20	5608
20+	0

When Should Meters Be Replaced?

- Most studies conclude that residential meters should be repaired or replaced every 15-20 years. As meters age, their loss of accuracy is seen in the understatement of water consumption.

ESTIMATED WATER LOSS BASED ON METER AGE

Meter Age	Unaccounted for water per month	Carol Stream gallons' loss based on current meter ages per month	Carol Stream gallons' loss based on current meter ages per year
Meter at least 15 years' old	54 gallons per month	146,880 gallons per month	1,762,560 gallons annually
Meters 16-20 years' old	90 gallons per month	313,740 gallons per month	3,764,880 gallons annually
Meters 21-25 years' old	378 gallons per month	850,122 gallons per month	10,201,464 gallons annually
Meters 26-30 years' old	1,656 gallons per month	231,840 gallons per month	2,782,080 gallons annually
	Totals	1,542,582 gallons per month	18,510,984 gallons annually

Given Carol Stream's meter age applied to this model, it is estimated that unaccounted the estimated loss in revenue to water fund annually is **\$128,281.12** and the estimated loss in revenue to the sewer fund is **\$63,307.57** for a total of **\$191,588.68**. These losses should be expected to increase over time as the meters continue to age.

Replacement Costs

Electromagnetic Meters Costs

Description (Meter Size)	Quantity	Unit Price	Amount
5/8 to 3/4 inch	8771	\$120.00	\$1,052,520
1 inch	1705	\$180.00	\$306,900
1.5 inch	266	\$475.00	\$126,350
2 inch	246	\$650.00	\$159,900
			\$1,645,670

MECHANICAL METER TECHNOLOGY

Mechanical Meter Costs

Description (Meter Size)	Quantity	Unit Price	Amount
5/8 to 3/4 inch	8771	\$80.00	\$701,680
1 inch	1705	\$92.00	\$156,860
1.5 inch	266	\$140.00	\$37,240
2 inch	246	\$600.00	\$147,600
			\$1,043,380

Advanced Metering Infrastructure Costs

Description	Quantity	Unit Price	Amount
Fixed Tower Based Station	1	\$50,000.00*	\$50,000
Meter Hardware Hosting Annual Fee	1	\$2,000.00**	\$2,000
Meter Software Implementation and Setup	1	\$18,000.00*	\$18,000
Meter Software Hosted Annual Fee	1	\$19,000.00**	\$19,000
			\$89,000

*One Time Cost

** Annual Cost

Meter Installation Costs

Meter Size	Quantity	Contractor Cost	In-House	Contractor Totals*	In-House Totals**
5/8 to 3/4 inch	8771	\$140.00	\$145.70	\$1,227,940.00	\$1,277,934.70
1 inch	1705	\$160.00	\$145.70	\$272,800.00	\$251,112.40
1.5 inch	266	\$385.00	\$145.70	\$102,410.00	\$39,176.48
2 inch	246	\$400.00	\$145.70	\$98,400.00	\$36,230.88
Misc. Installation Repairs		\$16,000.00	\$16,000.00	\$16,000.00	\$20,000.00
			Totals	\$1,717,550.00	\$1,624,454.30

Option 1 (electromagnetic meters – RECOMMENDED)

Meters: \$1,645,670

AMI: \$ 89,000

Installation: \$1,717,550*

Contingency: \$ 521,178 (15%)

Grand Total: \$4,000,000

Option 2 (mechanical meters)

Meters: \$1,043,380

AMI: \$ 89,000

Installation: \$1,717,550*

Contingency: \$ 427,490 (15%)

Grand Total: \$3,277,420

*NOTE: Installation estimate assumes contractors will perform work with a target completion of 12 months. It is ***preliminarily estimated*** that while the total cost to perform the installation work in-house is approximately \$90,000 less when compared to contractor costs, it would take up to five years to complete the work in-house diverting two full-time maintenance employees and one part-time secretary to complete the changeout.

Water Meter Replacement Recommendation

- Staff recommends proceeding with a complete changeout of residential meters starting in the coming fiscal year:
 - Select a solid-state, electromagnetic-type meter (Option #1).

- Utilize contractors for installation in order to complete the change out in roughly twelve months.
- **Proposed budget = \$4 million** (includes a 15% contingency .
- Fund the project via a loan/borrowing.
- Increase water rate to pay debt over 15 years (\$.44/1000 gls).

Rate Recommendation 5/1/2017 – Discussion deferred to a later date.

Trustee Frusolone stated she preferred that meter replacements be done by Village of Carol Stream Public Works employees vs. a contractor. Director of Public Works Modaff stated he does not have sufficient staff to complete a meter change out of this magnitude. She stated she preferred not to spend \$4 million all at once based on reliability reports she has read on line. Village Manager Breinig suggested and the Village Board concurred, this discussion be deferred until a later date.

Introduction to Small Cell Antennas

Village Engineer Jim Knudsen discussed small cell antenna technology and installation requests. Village Attorney Jim Rhodes reviewed the legal and zoning requirements for installation of small cell antenna in Village of Carol Stream's right-of-ways. The Village of Carol Stream is very limited in its regulation of small cell antenna installation. Staff and Village Attorney are proposing a Small Cell Antenna Ordinance with limits on small cell antennas and master license agreement for installations in Village of Carol Stream's right-of-ways.

The following was discussed with regard to small cell antennas:

Introduction

Cell phone providers and consultants have been contacting many municipalities in the Chicagoland area about placing small cell antenna equipment on public infrastructure or on ComEd power poles. Mobilitie "a neutral host" and Verizon Wireless have expressed interest in installing small cell facilities in the Village and others are likely to follow.

Mobile Data Trends

- Ⓐ Rapidly expanding use of cellular technology not only to provide voice service but digital data connection for smartphones, tablets and other devices has placed a growing demand on cellular networks.
- Ⓐ Mobile data traffic is expected to grow 6-fold from 2015 to 2020, a compound annual growth rate of 42%.
- Ⓐ 90% of households now use wireless service.
- Ⓐ Wireless data traffic has surpassed wired data traffic.
- Ⓐ Smart phones generate 41x more data traffic.
- Ⓐ 30 Million megabytes of data are used every five minutes for media streaming.
- Ⓐ 56% of mobile data is video.

Macro Cells-Current Technology

Many of us are familiar with macro cells.

A macro cell is a mobile phone network site that provides radio coverage to a large geographic area. Macro cells are typically mounted to towers that range from 50-200 feet in height and have a range of up to several miles.

Several throughout the community mounted on stand alone towers and attached to existing structures, including the Village's water towers.

Small Cell Antennas (Micro Cells)

New technology.

Cellular carriers and neutral hosts are now enabled to place small cells (micro cells) in areas that large cell sites don't cover well enough.

They can be placed to increase coverage in small geographic areas.

Small cells can also increase capacity in densely populated areas.

Small cell sites have a range from a half mile to a mile. (The higher the small cell is mounted, the greater the range).

Small cells are supplemented to address the shortcomings of macro cells.

Small cells communicate with macro cell sites through a radio frequency or a fiber optic line to backhaul to the cellular carrier equipment.

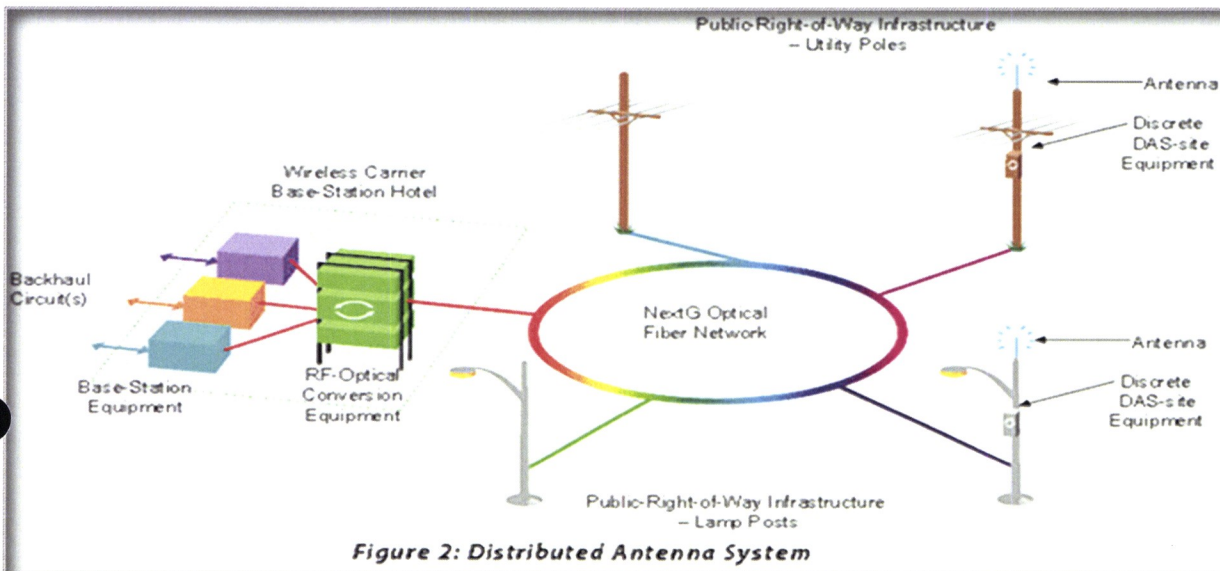
Where are small cells being placed?

Small cells can be found inside stadiums, throughout a large building or campus.

With respect to municipal installations, we can expect attachments to:

- Ⓐ Light poles
- Ⓐ Traffic signals
- Ⓐ Utility poles
- Ⓐ Publicly owned buildings and structures
- Ⓐ New single use poles

Installations may not be limited solely to the right-of-way.

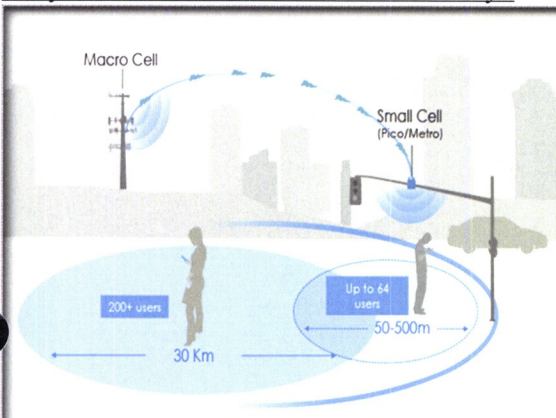


A Small Cell Network and Distributed Antenna System (DAS)

A distributed antenna system is a network of spatially separated antenna nodes connected to a common source through a transport network that provides wireless service within a geographic area or inside a structure.

Simply stated - small cell sites communicate to a macro site via radio frequency or fiber optic lines to create a stronger and faster cellular data network

Why are small cell networks necessary?



- Ⓐ Mobile data expected to increase by 650% from 2014-2018.
- Ⓐ Small cell capacity is overtaking macro cell capacity.
- Ⓐ DAS and small cell is less expensive, compact and with low power consumption.
- Ⓐ Supplement the shortcomings of macro cell sites.
- Ⓐ Can improve network performance by 300%.
- Ⓐ Provides more reliable and faster networks (5G/LTE).
- Ⓐ Provides location sensitive deployment.
- Ⓐ Boost coverage in a "dead zone".
- Ⓐ Capacity in an area can be increased quickly and economically.
- Ⓐ Small cells are an essential part the future of wireless carrier networks.

Sample Small Cell Installations:

- Attachment to a Streetlight
- Attachment to a power pole
- Stand Alone Poles
- Attachment to a Traffic Signal

There being no further business, Trustee McCarthy moved and Trustee Frusolone made the second to adjourn the Special Workshop meeting. The meeting was adjourned unanimously at 7:48 p.m.

FOR THE BOARD OF TRUSTEES

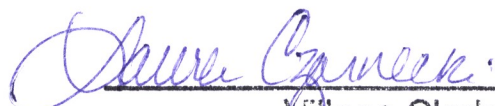

 Frank Saverino, Sr., Mayor

ATTEST:


 Laura Czarnecki, Village Clerk

Minutes approved by the President and Board of Trustees on this

20th day of March, 2017.


 Village Clerk