

# BUILDING A WORLD OF DIFFERENCE

**CITY OF ANN ARBOR**

**WATER & WASTEWATER SYSTEM  
CAPITAL COST RECOVERY STUDY**

18 March 2015



**BLACK & VEATCH**  
Building a world of difference.®

# AGENDA

- Welcome
- Project Concepts & Approach
- Preliminary Capital Charges
- Scenarios
- Next Steps
- Q&A

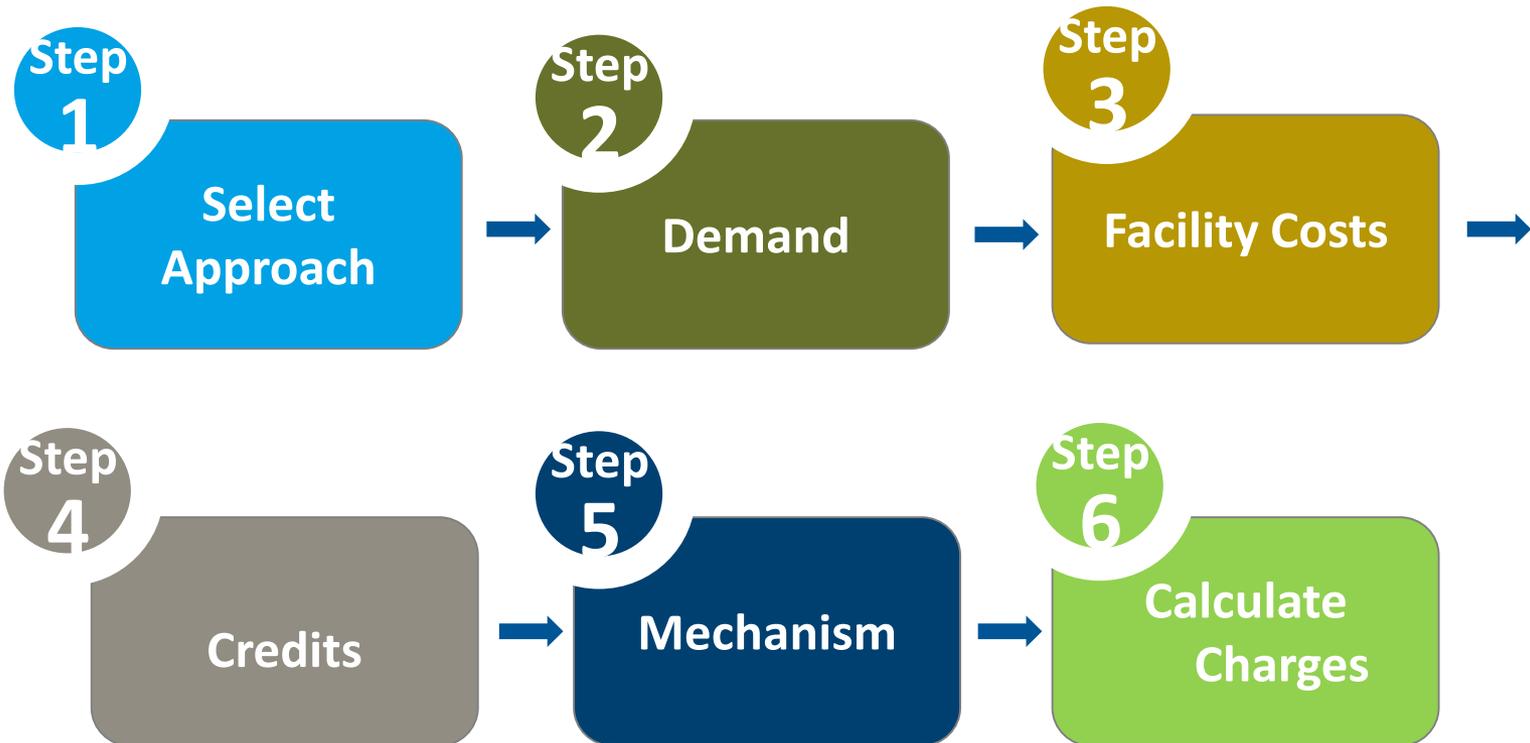
# PROJECT CONCEPTS & APPROACH

# ANN ARBOR CAPITAL COST RECOVERY CONSIDERATIONS



# DEVELOPING ANN ARBOR'S CAPITAL CHARGES

Process to **simplify** current Improvement Charge & Connection Fee structures

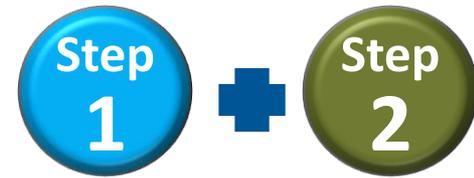


# VARIOUS INDUSTRY APPROACHES

<b>Asset Valuation</b>	<b>Structure</b>
Original Cost (OC) of Assets	Remaining Capacity in Systems
OC less Depreciation (OCLD)	Demand on Systems
Replacement Cost (RC) of Assets	Buy – In to Existing Assets
RC less Depreciation (RCLD)	Growth or Planned Facilities

**All valid components – Ultimately, choose one or more components most appropriate for jurisdiction**

# ANN ARBOR APPROACH



**Demand-based**

**Current &  
Future  
Customers**

**Water/Sewer  
Peak  
Demand**

**Maintain Same  
Level of  
Service**

**Buy-In &  
Extension**

**Existing  
Assets**

**Extension  
Costs –  
City**

**Asset  
Valuation**

**Credits**

**Standard industry approach**

# FACILITY COSTS



- **Existing Assets**

- Assets still in use and construction-in-progress
- Value at today's dollars (replacement value)
- Depreciation to recognize that existing customers have utilized useful life of older assets

- **Extension Assets**

- To serve areas where new assets are required
- City constructed
- Value based on 1998 Utility Service Plan assets forwarded to today's dollars

## CREDITS FOR...

- Past special assessments/charges
- Past contributed capital deducted from existing assets
- Current capital contributions, e.g. main extension
- Current system outstanding debt

# CHARGE MECHANISM

- **Meter size**
  - Standard industry approach – good measure of capacity demand
  - Easy to explain and administer
  - Customer rates are based on meter size too

Meter Size (in)	Meter Equivalents
<b>Displacement Meters</b>	
0.62	1.00
0.75	1.00
1.00	1.67
1.50	3.33
2.00	5.33
<b>Magmeters</b>	
0.75	1.83
1.50	4.50
2.00	7.33
2.50	16.67
3.00	25.00
4.00	41.67
6.00	93.33
8.00	121.67
10.00	195.00
12.00	293.33

# PRELIMINARY CHARGES

# PRELIMINARY BASELINE WATER CHARGES – EXISTING ASSETS

Line No.	Meter Size (in)	Existing Asset Buy-In Component per Meter Equivalent	Flat Cost per Meter	Capital Cost Recovery Charge
<b>Displacement Meters</b>				
1	0.62	\$5,054	\$220	<b>\$5,274</b>
2	0.75	\$5,054	\$220	<b>\$5,274</b>
3	1.00	\$8,424	\$220	<b>\$8,644</b>
4	1.50	\$16,848	\$220	<b>\$17,067</b>
5	2.00	\$26,957	\$220	<b>\$27,176</b>
<b>Magmeters</b>				
6	0.75	\$9,266	\$220	<b>\$9,486</b>
7	1.50	\$22,745	\$220	<b>\$22,964</b>
8	2.00	\$37,065	\$220	<b>\$37,285</b>
9	2.50	\$84,239	\$220	<b>\$84,459</b>
10	3.00	\$126,359	\$220	<b>\$126,578</b>
11	4.00	\$210,598	\$220	<b>\$210,818</b>
12	6.00	\$471,740	\$220	<b>\$471,959</b>
13	8.00	\$614,947	\$220	<b>\$615,166</b>
14	10.00	\$985,599	\$220	<b>\$985,819</b>
15	12.00	\$1,482,611	\$220	<b>\$1,482,830</b>

**Proposed charge schedule would apply to a connection to an existing main that has not contributed to the system**

**Figures subject to change upon final review process**

# PRELIMINARY WATER CHARGES – CITY CONSTRUCTED EXTENSIONS

Build Out Project Cost	# of REUs	Cost/REU
\$5,829,708	319	\$18,275

*Notes*

One (1) REU equates to one (1) 3/4" Disp meter. Project cost and REUs per 1998 Utility Service Plan and City staff.  
 Project cost inflated to today's dollars from 1998 value (ENR-CCI = 1.66).

**Figures subject to change upon final review process**

# PRELIMINARY BASELINE SEWER CHARGES – EXISTING ASSETS



Line No.	Meter Size (in)	Meter Equivalents	Existing Asset Buy-In Component per Meter Equivalent	Flat Cost per Meter	Capital Cost Recovery Charge
<b>Displacement Meters</b>					
1	0.62	1.00	\$6,587	\$120	<b>\$6,707</b>
2	0.75	1.00	\$6,587	\$120	<b>\$6,707</b>
3	1.00	1.67	\$10,978	\$120	<b>\$11,098</b>
4	1.50	3.33	\$21,956	\$120	<b>\$22,076</b>
5	2.00	5.33	\$35,130	\$120	<b>\$35,250</b>
6	3.00	14.67	\$96,608	\$120	<b>\$96,728</b>
7	4.00	23.33	\$153,694	\$120	<b>\$153,814</b>
<b>Magmeters</b>					
8	0.75	1.83	\$12,076	\$120	<b>\$12,196</b>
9	1.50	4.50	\$29,641	\$120	<b>\$29,761</b>
10	2.00	7.33	\$48,304	\$120	<b>\$48,424</b>
11	2.50	16.67	\$109,782	\$120	<b>\$109,902</b>
12	3.00	25.00	\$164,672	\$120	<b>\$164,792</b>
13	4.00	41.67	\$274,454	\$120	<b>\$274,574</b>
14	6.00	93.33	\$614,777	\$120	<b>\$614,897</b>
15	8.00	121.67	\$801,406	\$120	<b>\$801,526</b>
16	10.00	195.00	\$1,284,445	\$120	<b>\$1,284,565</b>

**Proposed charge schedule would apply to a connection to an existing main that has not contributed to the system**

**Figures subject to change upon final review process**

# PRELIMINARY SEWER CHARGES – CITY CONSTRUCTED EXTENSIONS

Build Out Project Cost	# of REUs	Cost/REU
\$4,593,539	230	\$19,972

*Notes*

One (1) REU equates to one (1) 3/4" Disp meter.  
 Project cost and REUs per 1998 Utility Service Plan and City staff.  
 Project cost inflated to today's dollars from 1998 value (ENR-CCI = 1.66).

**Figures subject to change upon final review process**

# DEVELOPMENT SCENARIOS

A. CITY CONSTRUCTS ASSETS

B. DEVELOPER CONSTRUCTS ASSETS

# A. CITY CONSTRUCTS WATER/SEWER LINES

## Water

Meter Size (in)	Development Project Meters	Number of REUs	Total Extension Cost	Total Capital Cost Recovery Charges	Total Project Charges	Maximum Cost per Meter
<b>Displacement Meters</b>						
0.75	20	20.00	\$365,499	\$105,480	\$470,978	<b>\$23,549</b>

## Sewer

Meter Size (in)	Development Project Meters	Number of REUs	Total Extension Cost	Total Capital Cost Recovery Charges	Total Project Charges	Maximum Cost per Meter
<b>Displacement Meters</b>						
0.75	20	20.00	\$399,438	\$134,136	\$533,574	<b>\$26,679</b>

Figures subject to change upon final review process

## B. DEVELOPER CONSTRUCTS ASSETS – WATER CONTRIBUTED UTILITY ASSETS

Line No.	Meter Size (in)	Development Project Meters	Gross Capital Cost Recovery Charges	Contributed Asset Credit	Net Capital Cost Recovery Charges
<b>Displacement Meters</b>					
1	0.62	0	\$0	51.4%	\$0
2	0.75	5	\$26,370	51.4%	\$12,825
3	1.00	0	\$0	51.4%	\$0
4	1.50	0	\$0	51.4%	\$0
5	2.00	5	\$135,881	51.4%	\$66,087
<b>Magmeters</b>					
6	0.75	0	\$0	51.4%	\$0
7	1.50	0	\$0	51.4%	\$0
8	2.00	5	\$186,424	51.4%	\$90,669
<b>Total Project Fee:</b>					<b>\$169,582</b>

### Notes

(1) Contributed Capital Credit represents the percentage of 12" and smaller water pipes RCLD value compared to total water system RCLD value.

**Figures subject to change upon final review process**

# B. DEVELOPER CONSTRUCTS ASSETS – SEWER CONTRIBUTED UTILITY ASSETS

Line No.	Meter Size (in)	Development Project Meters	Gross Capital Cost Recovery Charges	Contributed Asset Credit	Net Capital Cost Recovery Charges
<b>Displacement Meters</b>					
1	0.62	0	\$0	11.0%	\$0
2	0.75	5	\$33,534	11.0%	\$29,845
3	1.00	0	\$0	11.0%	\$0
4	1.50	0	\$0	11.0%	\$0
5	2.00	5	\$176,250	11.0%	\$156,862
6	3.00	0	\$0	11.0%	\$0
7	4.00	0	\$0	11.0%	\$0
<b>Magmeters</b>					
8	0.75	0	\$0	11.0%	\$0
9	1.50	0	\$0	11.0%	\$0
10	2.00	5	\$242,119	11.0%	\$215,485

**Total Project Fee: \$402,192**

*Notes*

(1) Contributed Capital Credit represents the percentage of 8" and smaller sewer pipes RCLD value compared to total water system RCLD value.

**Figures subject to change upon final review process**

# PAST TASKS & NEXT STEPS

# PROJECT TIMELINE

## September – October (Completed)

- Conducted data review and analysis
- Held initial Stakeholder meetings

## November – January (Completed)

- Developed capital charge model & methodology

## January – February (Completed)

- Conducted staff meetings to refine approaches
- City Council study session

## March - July

- **Today** - Hold Stakeholder meetings
- Complete any revisions & prepare report
- City Council approval as part of budget process

**Q&A**

# PRELIMINARY WATER CHARGES – EXISTING ASSETS

Line No.	Description	Replacement Cost less Depreciation Approach
<b>Buy-In to Existing Assets</b>		
<i>Water System Assets (Capacity-Generating)</i>		
1	System Asset Value Less Donated Capital (\$)	280,969,565
2	Hourly Peak Flow Rate Capacity (gal)	51,400,000
3	Existing Asset Cost per Gallon (\$)	5.47
4	Less: Outstanding Debt at Net Present Value (\$/gallon)	1.10
5	<b>Net Cost per Gallon of Capacity</b>	<b>\$ 4.37</b>
<i>Other Assets (Non-Capacity Generating)</i>		
6	Land	5,113,238
7	Equipment	11,507
7	Vehicles	912,021
8	Total Costs (\$)	6,036,766
9	Existing Connections	27,487
10	<b>Asset Cost per Connection</b>	<b>\$ 219.62</b>

**Figures subject to change upon final review process**

# PRELIMINARY SEWER CHARGES – EXISTING ASSETS

Line No.	Description	Replacement Cost less Depreciation Approach
<b>Buy-In to Existing Assets</b>		
<i>Sewer System Assets (Capacity-Generating)</i>		
1	System Asset Value Less Donated Capital (\$)	331,875,623
2	Hourly Peak Flow Capacity (gpd)	57,300,000
3	Existing Asset Cost per Gallon (\$)	5.79
4	Less: Outstanding Debt at Net Present Value (\$/gallon)	0.99
5	<b>Net Cost per Gallon of Capacity</b>	<b>\$ 4.80</b>
<i>Other Assets (Non-Capacity Generating)</i>		
6	Land	2,614,798
7	Equipment	130,565
8	Vehicles	444,150
9	Total Costs (\$)	3,189,513
10	Existing Connections	26,603
11	<b>Asset Cost per Connection</b>	<b>\$ 119.89</b>

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