Part 5:
Tariffs, cost allocation, rate design, and consumer policies

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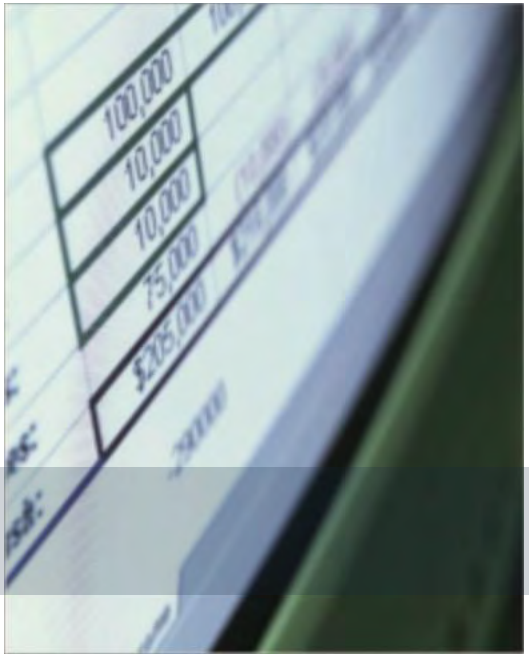
Revised 3/6/2024



MICHIGAN STATE UNIVERSITY

5.0 Utility, enterprise, or investment basis: private and some public

$$RR = r_a (RB) + O\&M + D + T$$

where:

RR	=	total test year (annualized) revenue requirements
r_a	=	authorized (not guaranteed) rate of return to compensate debt holders and equity shareholders
RB	=	rate base (original cost of invested utility plant in service net of accumulated depreciation and adjustments)
O&M	=	operation & maintenance expenses, including administrative & general
D	=	depreciation and amortization expense
T	=	taxes other than income and income tax expense

Cost-based rates and revenue sufficiency are a function of both the numerator and denominator:

$$\frac{\text{Revenue requirements (RR)}}{\text{Estimated sales (billing determinants)}}$$

< you are here

5.0 Cost allocation and rate design topics

1. Rate schedules (tariffs)
2. Evaluation criteria in ratemaking
3. Dynamic role of price
4. Price elasticity of demand
5. Variations and trends in demand
6. Deliveries to the system
7. Non-revenue production
8. Price differentiation and subsidization
9. Cost-of-service studies and methods
10. Cost functionalization and classification
11. Cost allocation by customer class
12. Metering and billing
13. Fixed and variable charges
14. Rate-design alternatives
15. Bill calculation and impact
16. Consumer rights, responsibilities, and protection
17. Addressing affordability
18. Implementing rate changes
19. Settlement conditions
20. Ratemaking scenarios

5.1 Rate schedules (tariffs)

- Revenue requirements specify the size of the pie and rate design slices it up
- A tariff is more than a price
  - "A compilation of all effective rate schedules of a particular company or utility. Tariffs include General Terms and Conditions along with a copy of each form of service agreement" (FERC)
  - "A tariff is a pricing schedule or rate plan that utilities offer to customers. Along with the pricing plan, there may be certain rules for each tariff a utility offers, such as the times or seasons when prices will vary, eligibility for a tariff, when/how a customer can join or leave the tariff, what type of meter must be installed and more. Other things that can be found in a utility's tariff book include sample forms that customers may be required to fill out, rules for applications for service, bill adjustment, low-income programs and service area maps" (CPUC)

5.1 York: tariff sheets (appendix to the settlement)

The York Water Company
York, Pennsylvania

Supplement No.
To
Water-Pa. P.U.C. No. 14
One Hundred Nineteenth Revised Page No. 3
Canceling
One Hundred Eighteenth Revised Page No. 3

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(C) Indicates Change

ISSUED: EFFECTIVE: March 1, 2019

The York Water Company
York, Pennsylvania

Supplement No.
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Twenty-fifth Revised Page No. 42
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13. Rate Schedules (Continued) Schedule

"A" - Meter Rates (Continued)

Gravity System (Continued)

RATES

Customer Charges

Size of Meter	All Classes	
5/8"	$16.25	(I)
3/4"	22.30	
1"	31.50	
1-1/2"	48.50	
2"	63.00	
3"	151.80	
4"	225.90	
6"	250.90	
8"	481.40	
10"	619.50	
12"	762.70	

Output Charges

	Rate per 1,000 Gallons					
	Residential		Commercial		Industrial	
Up to 5,000 Gallons Per Month	$5.012	(I)	$4.554	(I)	$4.554	(I)
Next 45,000 Gallons Per Month	5.012	(I)	3.261	(I)	3.261	(I)
Next 1,950,000 Gallons Per Month	5.012	(I)	2.541	(I)	2.831	(I)
Over 2,000,000 Gallons Per Month	5.012	(I)	2.541	(I)	2.437	(I)

(I) Indicates Increase

ISSUED: EFFECTIVE: March 1, 2019

5.1 York: notice of increase

News Release

The York Water Company
130 East Market Street
York, PA 17401

Contact: Jeffrey R. Hines, President and CEO
or Matthew E. Poff, Chief Financial Officer

Phone: 717-845-3601

FOR IMMEDIATE RELEASE

YORK WATER COMPANY FILES A RATE REQUEST

Proposes first general rate increase in 5 years.
Includes $77 million capital investment in York and Adams Counties.
Average water cost still 1 penny per gallon.

York, Pennsylvania, May 30, 2018: The York Water Company (NASDAQ:YORW) on May 30, 2018 asked the Pennsylvania Public Utility Commission (PPUC) for a general increase in base water rates of $6.4 million per year, or an overall 13.1% increase, and a general increase in base wastewater rates of $288,623 per year, or a 25% increase. If granted immediately, the rate increase would be effective August 1, 2018. The PUC may delay the effective date until March 2019, and after an investigation, grant all, some, or none of the request. As a result, the final effect on water and wastewater bills may be different than the Company's request. The request may also be reviewed by the Office of Consumer Advocate and the Office of Small Business Advocate.

The Company's filing with the PUC also requests to combine in part, the revenue requirement for the Company's wastewater operations with the Company's water operations as authorized by legislation enacted in 2012.

If the increase were granted in its entirety, the typical residential water customer would pay an additional $4.30 per month (14 cents per day), the typical commercial water customer would pay an additional $15.59 per month (52 cents per day), the typical industrial water customer would pay an additional $125.61 per month ($4.19 per day).

For our wastewater customers: an Asbury Pointe Subdivision wastewater customer would pay an additional $12.50 per month (42 cents per day), a typical East Prospect and Lower Windsor Area residential wastewater customer would pay an additional $12.94 per month (43 cents per day), a typical East Prospect and Lower Windsor Area commercial wastewater customer would pay an additional $16.04 per month (53 cents per day), a typical West York Borough residential wastewater customer would pay an additional $6.54 per month per dwelling unit (22 cents per day) and a typical West York Borough commercial and industrial customer would pay an additional $8.09 per month per dwelling unit (27 cents per day).

Jeffrey R. Hines, President and CEO of York Water, said the increase is necessary due to approximately $77 million in capital investments that the Company has made since its 2013 rate filing and will make through February of 2020. The capital investments are necessary to: reinforce, replace, and reline aging water mains; replace service lines, meters, and hydrants; construct an untreated water pumping station on Lake Redman to increase security, reduce costs, and provide redundancy in case of emergencies; increase water quality and operational efficiency through upgrades to facilities and equipment; expansion and improvements of the water and wastewater treatment plants and other facilities to better meet current and upcoming regulations; and for replacements and upgrades of other infrastructure, including York Water's water supply dams.

Hines said: "Costs to be recovered in this rate filing include replacement costs for over 40 miles of aging pipeline, about 4% of our total pipe, which extends the life of our infrastructure, reduces costs associated with main breaks and leaks, and provides improved customer service and reliability. In addition to these capital investments, we are also seeking to recover increased costs such as personnel expenses, depreciation, and increases in normal operations and maintenance expenses. York Water remains one of the most efficient water utilities in the nation, continuing to reduce or eliminate various expenses since its last rate case, including reduction in income taxes from the 2017 Tax Act and tax repair deductions. This has helped to offset and delay this proposed increase in rates."

NOTICE OF PROPOSED WATER RATE CHANGES

Dear Customer:

The York Water Company filed a request with the Pennsylvania Public Utility Commission (PUC) to increase your rates for water service, as well as wastewater service, as of August 1, 2018. A full investigation of this request could delay the change until March 2019. This notice describes the Company's rate request, the PUC's role, and what actions you can take.

The Company has requested an overall base rate increase for water service of $6.4 million per year. If the Company's entire request is approved, the typical water bill for:

Residential gravity customers using 4,600 gallons per month would increase from $37.78 to $41.84 per month, or by 10.7%. Residential repumped customers using 3,699 gallons per month would increase from $44.72 to $49.11 per month, or by 9.8%.

Commercial gravity customers using 28,428 gallons per month would increase from $115.77 to $126.29 per month, or by 9.1%. Commercial repumped customers using 39,541 gallons per month would increase from $266.26 to $288.46 per month, or by 8.3%.

Industrial gravity customers using 133,197 gallons per month would increase from $431.96 to $472.72 per month, or by 9.4%. Industrial repumped customers using 308,127 gallons per month would increase from $1,764.56 to $1,988.26 per month, or by 12.7%.

The Company's filing with the PUC also requests to combine in part, the revenue requirement for the Company's wastewater operations with the Company's water operations as authorized by legislation enacted in 2012.

Q. Why are communications important when it comes to ratemaking?

5.1 York: complaint filed by Mr. Eifert

VIA FIRST CLASS MAIL

ROSEMARY CHIANETTA, SECRETARY
PENNSYLVANIA PUBLIC UTILITY COMMISSION
COMMONWEALTH KEYSTONE BUILDING
400 NORTH STREET, 2ND FLOOR NORTH
P.O. BOX 3265
HARRISBURG, PA 17105-3265

RECEIVED
SEP 7 2018
PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

RE: DOCKET NO. R-2018-3000019 C-2018-3003908

DEAR SECRETARY CHIANETTA,

ENCLOSED IS MY REPLY TO THE AUGUST 20, 2018 CORRESPONDENCE SENT TO YOU BY DEVIN RYAN, ATTORNEY FOR THE YORK WATER COMPANY.

SINCERELY,

MICHAEL EIFERT

SEPTEMBER 7, 2018

DEAR SECRETARY CHIANETTA,

THIS LETTER IS IN RESPONSE TO THE CORRESPONDENCE SENT TO YOU BY DEVIN RYAN, ATTORNEY FOR THE YORK WATER COMPANY, ON AUGUST 20, 2018. DEVIN RYAN STATED IN HER LETTER I WAS INCORRECT IN MY CALCULATIONS OF THE PROPOSED RATE INCREASE BY THE YORK WATER COMPANY. I BASED MY CALCULATIONS ON INFORMATION I RECEIVED FROM A YORK WATER COMPANY RECEPTIONIST I SPOKE TO IN JULY, 2018. THE RECEPTIONIST TOLD ME THE RATE WOULD BE $ 0.0098 PER GALLON AND NO INCREASE IN CUSTOMER CHARGE PER MONTH. THE AUGUST 1, 2018 START DATE FOR THE RATE INCREASE WAS SENT TO ME BY THE YORK WATER COMPANY IN MY JULY, 2018 WATER BILL. A COPY OF THAT NOTICE IS INCLUDED IN THIS CORRESPONDENCE. DEVIN RYAN STATED THAT THE INCREASE WILL NOW BE $ 0.0083 PER GALLON ALONG WITH A $ 2.50 MONTHLY CUSTOMER CHARGE INCREASE.

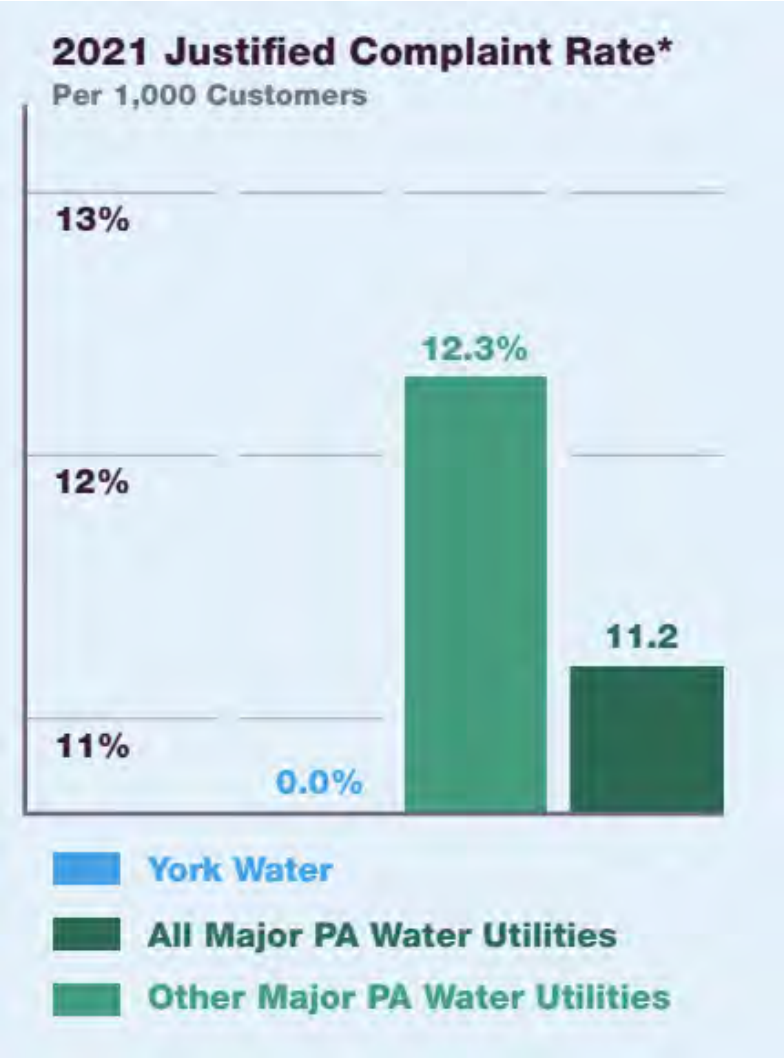
BASED ON THESE REVISED CHANGES, THE RATE INCREASE WILL BE 9.4% FROM THE LAST INCREASE ON MARCH, 2014 (A 3100 GALLON USAGE RATE WAS USED WHICH IS CONSISTANT WITH MY CALCULATIONS IN THE FORMAL COMPLAINT I SUBMITTED). IT IS STILL A SIGNIFICANT INCREASE. IF YOU FACTOR IN THE TWO RATE INCREASES, THE AMOUNT WOULD BE A 24.5% INCREASE OVER THE LAST 5 YEARS! THIS AVERAGES OUT TO ALMOST 5% PER YEAR. THE INCREASE IS UNREASONABLE CONSIDERING THE CURRENT COST OF LIVING ADJUSTMENTS THE AVERAGE PERSON RECEIVES. PLEASE REJECT THIS PROPOSED RATE INCREASE BY THE YORK WATER COMPANY. THANK YOU.

SINCERELY,

MICHAEL EIFERT

Q. Why is consumer advocacy important to ratemaking?

5.1 York: cost and complaint metrics



5.2 Poll: criteria in ratemaking

- Which of the following are ***not*** among the traditional economic criteria used to evaluate rates and rate structures?

A. Household utility affordability

B. Revenue sufficiency and stability

C. Interclass and intraclass equity

D. Understandability and practicality

5.2 Evaluation criteria in ratemaking

- Regulated rates must serve the public interest
  - James Bonbright specified *economic* criteria for “sound” rates and rate structures (*Principles,* 1961) – considered the "right way" to price and promote “rational use”
  - There is no right way to allocate & price – only alignment with principles and objectives
- Evaluation criteria for public utility rates (Bonbright modified)
  - Financial viability
  - Economic efficiency
  - Equitable allocation
  - Operational performance
  - Network optimization
  - Environmental stewardship (social equity)*
  - Distributive justice (social equity)*
- Rate design choices are also bound by practical constraints and considerations
  - Understandable, unambiguous, and transparent
  - Technically feasible and cost effective
  - Politically acceptable and legally defensible

Q. What pricing goals should regulators and utilities pursue?

5.2 Values, judgment, and tradeoffs

- Pricing is a tool, not an objective
  - Various options can fulfill revenue requirements and meet other objectives
  - Rate design should be revenue neutral – no more or less
  - No structure is inherently “right” or “wrong”
  - Choices reflect complex tradeoffs among values
  - More attention is paid to efficiency than equity
  - Impacts depend on all fixed and variable components
- Rate design can be controversial and “political” – might not be a bad thing
  - Who pays, how much, and how they pay (interclass and intraclass)
  - “Social ratemaking” departs from accepted cost-of-service principles and practices
  - Sacrifices (some) efficiency in resource allocation to achieve (legitimate) social goals
  - Reflects community values, as well as regulatory authority and discretion
  - Examples: lifeline rates, economic-development rates, and usage-budget rates
- “Just and reasonable” is informed by economics but is a legal standard
  - Economic conception of equity in ratemaking focuses on cost causation
  - Legal equity allows for discretion and pragmatism
  - Social equity considers fairness and outcomes based on values and rights

5.2 Cost of service and its recovery

	Societal level		System level		Ratepayer level
	Full social cost and value	Full economic cost	Full-cost accounting	Full-cost recovery	Full-cost allocation & pricing
Cost of service					
Environmental, economic, and social externalities (spillovers)	√				
Economic opportunity costs and avoided costs	√	√			
Capital and operating expenditures, depreciation, taxes, and reserves	√	√	√		
Source of revenues					
Property and other taxes, fund transfers, government grants, and other income and contributions				√	
User fees (rates and charges), including connection fees and system development charges				√	√

5.2 Economic principles and their limits

- Economic principles and practice favor prices based on the cost of service
  - Allocation of costs to cost causers for efficiency, equity, and sustainability
  - Accurate cost-based prices communicate value, induce efficiency, enable “self-rationing” (consumer sovereignty) for discretionary usage
  - Focus on economic efficiency and “rationality” can obscure social equity concerns
- Cost, price, and value
  - Well-regulated prices based on full-cost accounting understate both the true cost and the true value of utility services due to positive and negative externalities
  - Price is necessary but not always sufficient for inducing desirable production and consumption behavior and protecting the commons
  - Non-price methods can amplify price signals – “nudging”
- Rate design may also consider
  - Need for and value of service
  - Economic and market conditions
  - Potential for customer bypass

Q. What pricing challenges do utilities and regulators face today?

5.2 Poll: objectives in rate design

- Which of the following are ***not*** among the objectives of rate design?

A. To fairly allocate utility costs to ratepayers

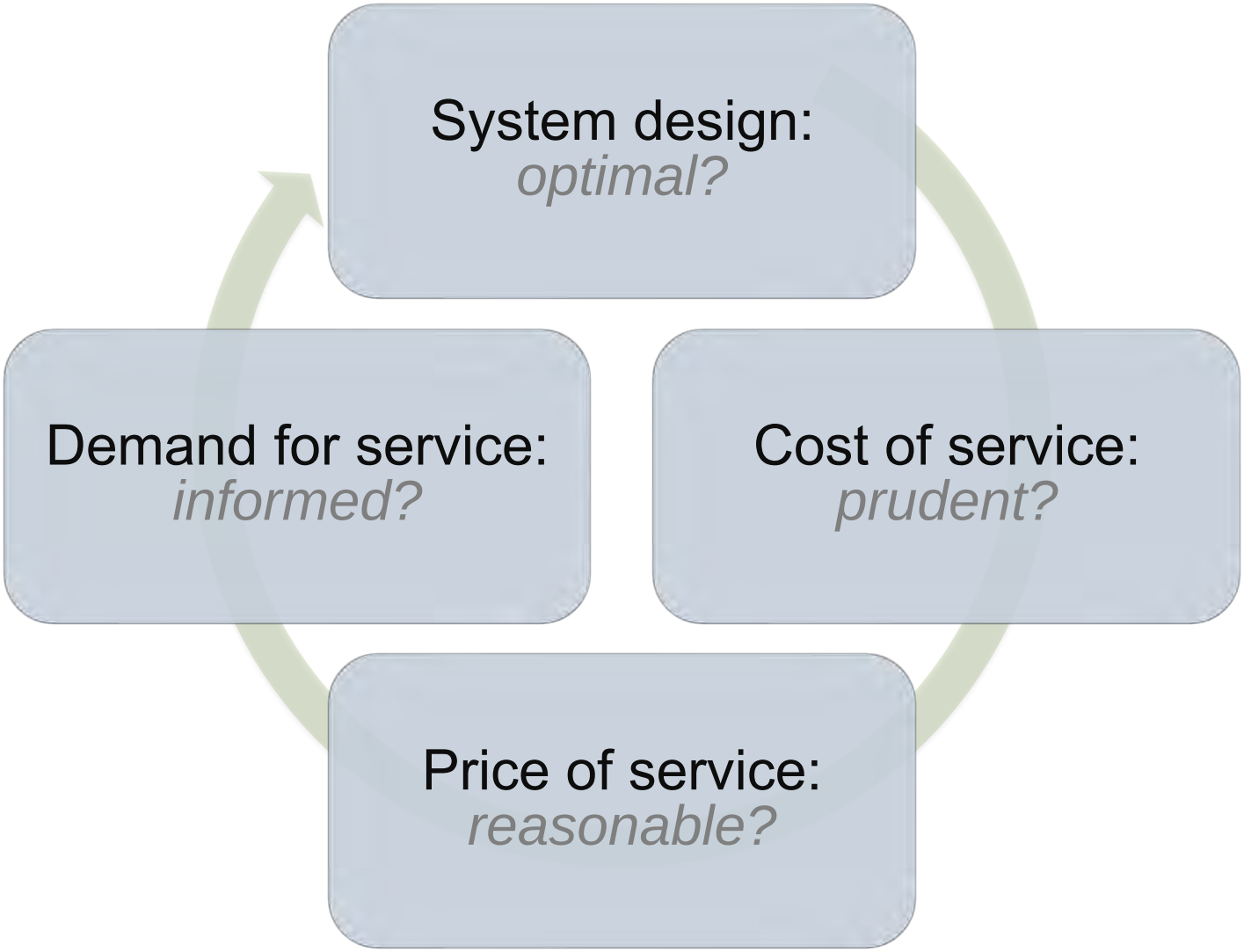
B. To send cost-based price signals to consumers

C. To increase revenues for essential utility programs

D. To incorporate long-run costs and externalities

E. None of the above

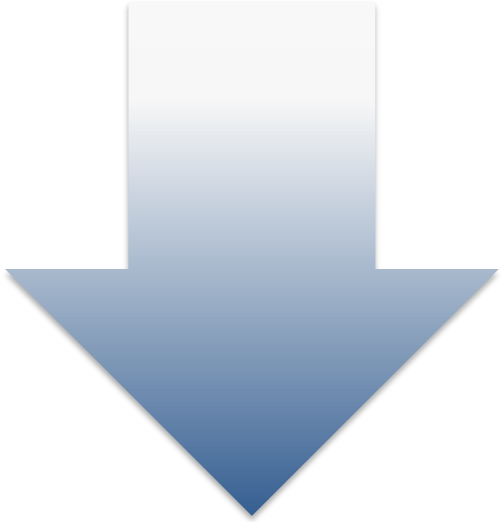
5.3 Dynamic role of price in utility sustainability



5.3 Pricing economics and potential welfare effects

Prices too high

Exaggerates price signals for discretionary usage
Extracts rents from essential usage (Ramsey pricing)
Regressive deprivation and endangerment
Drag on the local economy from income effect
Excess capacity and stranded investment
High reserves and transfers from system
Foregone revenues from lost sales, theft, bypass, defection



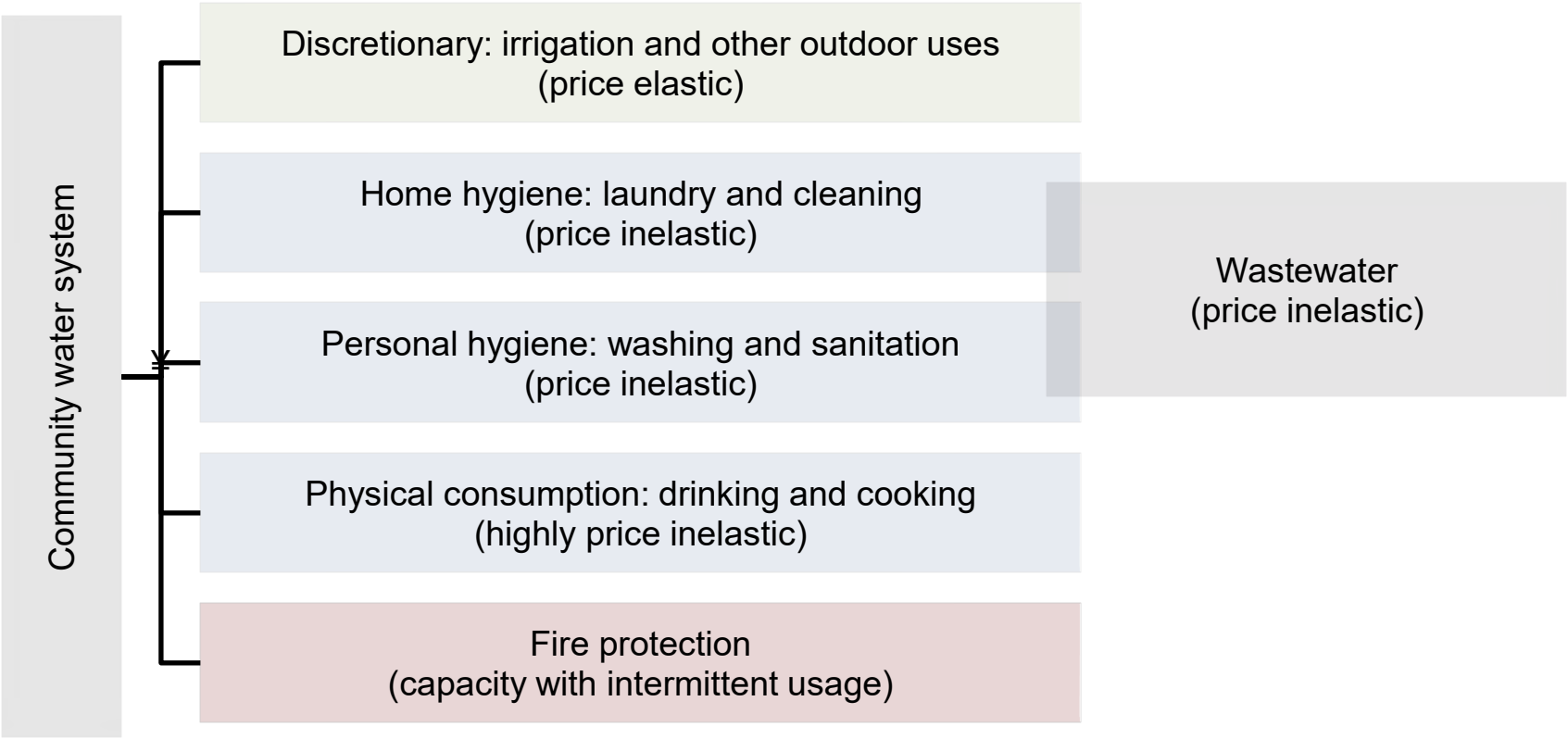
Prices too low

Weakens price signals for discretionary usage
Requires another means of cost recovery
Excessive and wasteful use of resources
Inadequate infrastructure investment
Poor capacity utilization and congestion
Low reserves and subsidies to system
Financial effects of revenue inadequacy

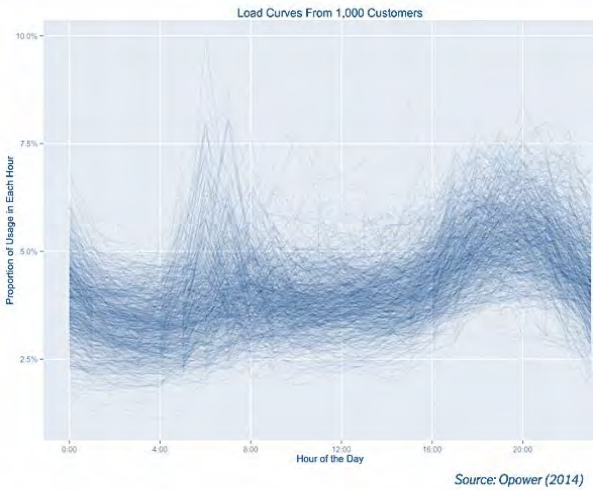
5.4 Price elasticity of demand

- Elasticities are relevant to ratemaking in terms of forecasting sales revenues
- Price elasticity is the responsiveness or sensitivity of demand (usage) to price
  - For individual, system, or market – varies by various factors
  - Demand curve reflects the consumer's marginal willingness to pay
  - Price elasticity incorporates ability to pay (income effects)
- Measured as: (%△ in quantity demanded) / (%△ in price)
  - A value of 1 (or -1) is unitary elasticity (e.g., price up 1%, usage down 1%)
  - Lower for necessities and higher for discretionary goods - and challenging to estimate
- Utility services are relatively price-inelastic – but variable by type
  - Price increases may not induce substantial usage reductions
  - First blocks tend to be more essential and less elastic – equity
  - Later blocks may be shaped by marginal prices – efficiency
- Other elasticities of demand
  - Income – may be relatively inelastic and varies by level
  - Weather – may be relatively more elastic
  - Emerging research on demographic groups
  - Meta-analyses consolidate findings in this area

5.4 Water usage: five products, one set of pipes



5.5 Variations and trends in demand



- How demand or “load” varies
  - From year to year (climatic)
  - From month to month (seasonal)
  - By day of week (work patterns)
  - By time of day (diurnal with hourly & “needle peaks”)
  - By class of customer
- Base load vs. peak demand
  - Base load is the minimum requirement over a period
  - Peaking load (capacity needs) are seen in load duration curves
- Demand (load curve) as an engineering challenge: “system design”
  - Solve from the bottom up – supply and storage
  - How to meet load with appropriate reserves?
- Demand (load curve) as an economic challenge: “load design”
  - Solve from the top down – prices and enabling technologies to "flatten the curve”
  - How to assign network capacity costs to peak users? (air conditioning, lawn watering)
- Special challenges in managing demand
  - Resource (commodity) scarcity and network congestion (capacity)
  - Reliability standards, persistent peaks, wealth effects, demand hardening, anomalies
  - Prudence calls for efficient load management and capacity utilization reflected in the spread of average to peak demand

5.5 Demand and system design (water)

Maximum-hour (hourly peak) demand*
- Distribution mains, pumping stations, treated water storage

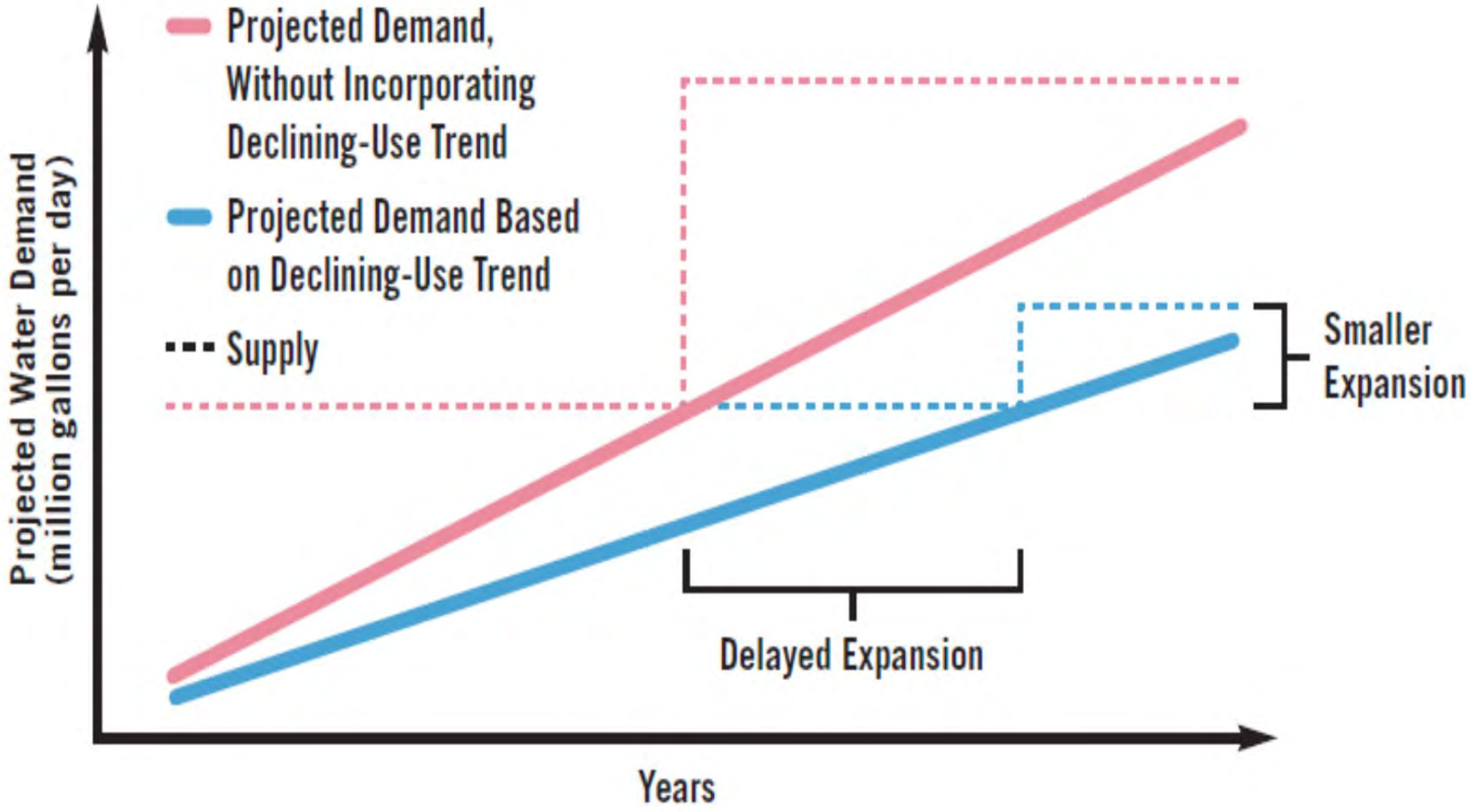
Maximum-day (daily peak) demand*
- Transmission lines, water treatment plants

Average-day demand (annual/365)
- Source-of-supply facilities, raw water storage (reservoirs)

Based on Howe and Linaweaver (1967)

*Note: fire-flow requirements (codes, insurance) play a significant role in system design and cost – the greater of max-day or max-hour plus a fire.

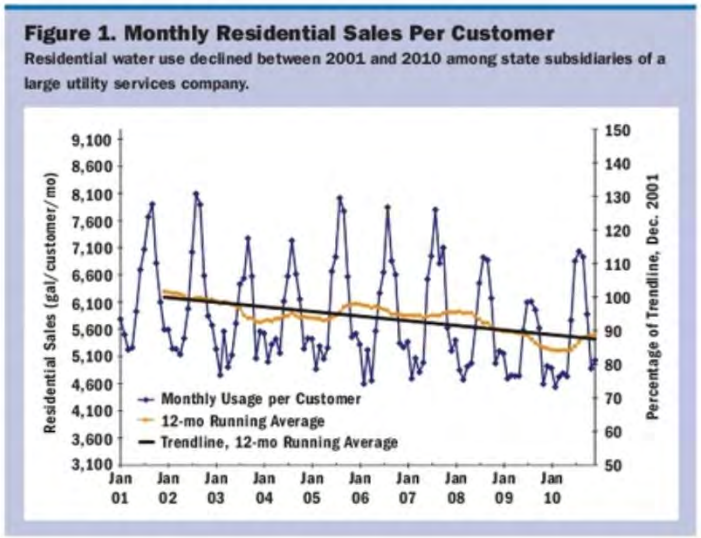
5.5 Demand management and avoided cost

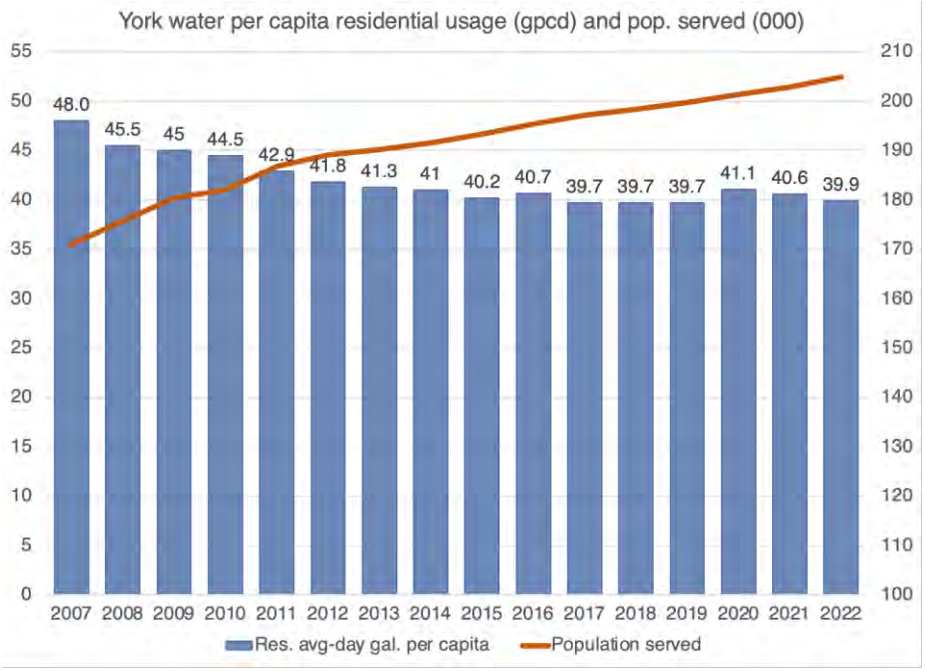


Source: Hunter, et al, Declining Residential Water Usage, 2011

5.5 Trends in demand

- Trends in demand can be stationary or non-stationary
  - May also be more or less volatile
  - Water usage has declined with advances in efficiency – efficient use is also less elastic
- Rates are derived from revenues/sales (sales are the denominator)
  - Accurate sales forecasts for the rate year are as important as accurate cost forecasts
  - Moving averages are misleading when trends are non-stationary (volatile or not)
  - Usage forecasts for ratemaking and spending (CPCN) should be consistent





5.5 York: demand characteristics

2018 Page 1

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
PLANNING AND CONSERVATION DIVISION

Primary Facility Report for YORK WATER CO (19653)
REPORT FOR CALENDAR YEAR JAN 1 TO DEC 31, 2018

Client: YORK WATER CO

PRIMARY FACILITY NAME AND MAILING ADDRESS

Name and Address:	YORK WATER CO
	130 E MARKET ST
	YORK, PA 17401
Contact Information:	DOUG CRAWSHAW
	WATER QUALITY MGR
Phone:	717-845-3601
Facility e-mail:	DOUGC@YORKWATER.COM

PEAK DAY WATER USE FOR REPORT YEAR 2018

Date:	01/01/2018 (mm/dd/yyyy)
Gallons Per Day:	999,999,999,999

MINIMUM DAY WATER USE FOR REPORT YEAR 2018

Date:	02/24/2018 (mm/dd/yyyy)
Gallons Per Day:	16,700,000

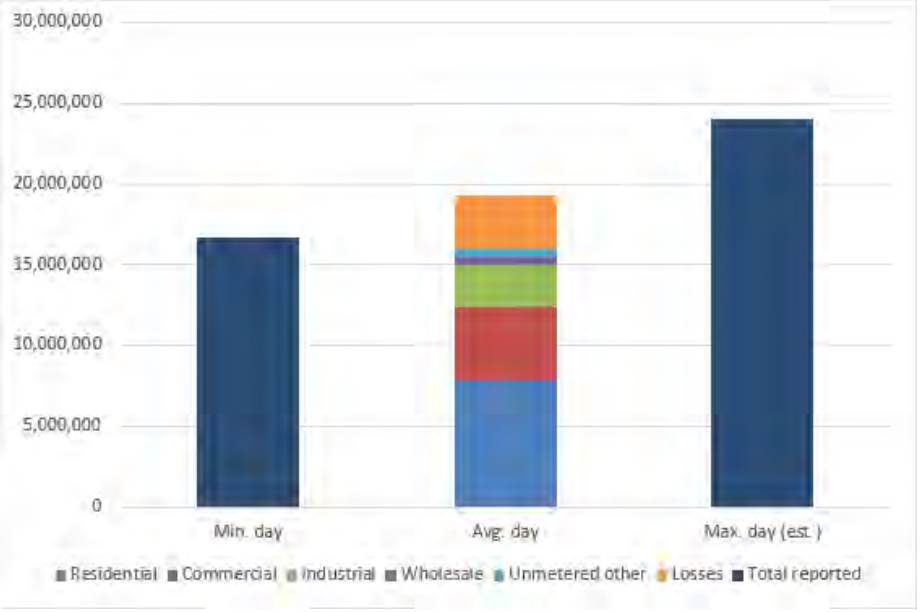
POPULATION SERVED

Population Served:	198,365

AVERAGE DAILY WATER USE

Type	Metered Connections		Unmetered Connections	
	Number	Water Use (GPD)	Number	Water Use (GPD)
Domestic	61,479	7,848,127	0	0
Commercial	4,534	4,521,070	0	0
Industrial	299	2,595,343	0	0
Institutional	0	0	0	0
Bulk Sales to other PWS	4	570,666	0	0
Oil and Gas	0	0	0	0
Other	0	0	1,296	438,375
Water Losses				3,326,706
Total	66,316	15,535,206	1,296	3,765,081

Explain 'Other' Connections: COMPANY USE, ESTIMATED FIRE HYDRANT FLUSHING AND TESTING.



Q. Why is the peak-to-average demand ratio relevant to rate design?

5.5 York: monthly production (seasonality)

2018 Page 1

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF SAFE DRINKING WATER
PLANNING AND CONSERVATION DIVISION

Subfacility Report for SOUTH BR CODORUS CREEK 1 (926)
REPORT FOR CALENDAR YEAR JAN 1 TO DEC 31, 2018

Client: YORK WATER CO
Primary Facility: YORK WATER CO

MEASURING/METERING OF WATER

Measure Method	METERED
Last Date Tested	01/17/2018 (mm/dd/yyyy)
Tested By	DARRELL KEHR

WITHDRAWALS OR USE FOR REPORTING YEAR 2018

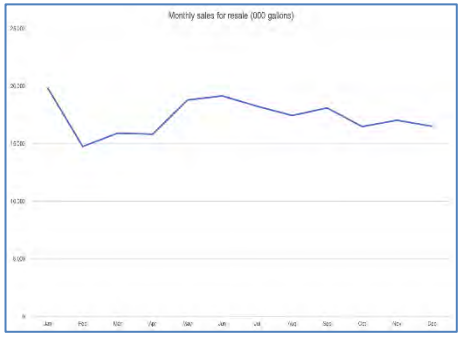
Month	Total Gallons	Month	Days
Jan Gallons	617,991,000	Jan Days	31
Feb Gallons	513,969,000	Feb Days	28
Mar Gallons	565,512,000	Mar Days	31
Apr Gallons	554,611,000	Apr Days	30
May Gallons	622,325,000	May Days	31
Jun Gallons	612,517,000	Jun Days	30
Jul Gallons	658,676,000	Jul Days	31
Aug Gallons	631,133,000	Aug Days	31
Sep Gallons	614,751,000	Sep Days	30
Oct Gallons	626,449,000	Oct Days	31
Nov Gallons	499,138,000	Nov Days	26
Dec Gallons	474,260,000	Dec Days	25
Total Gallons	6,991,332,000	Total Days	355

FOR PUBLIC WATER SUPPLIERS

Double Counted: N
If changed, Explain why:

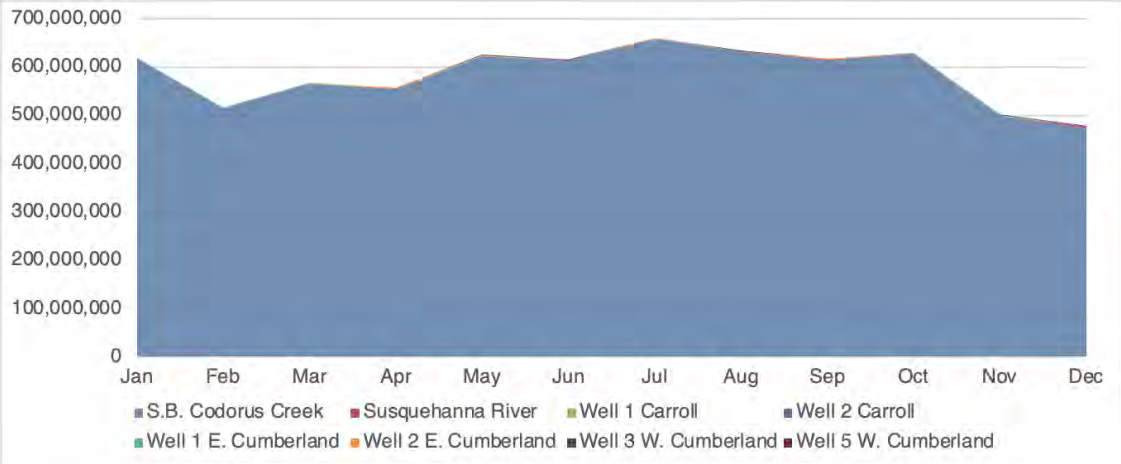
REPORT SUBMISSION INFORMATION

Submitted By:	Kent Croman
Submitted On:	03/04/2019
Submitted By Email:	kentc@yorkwater.com

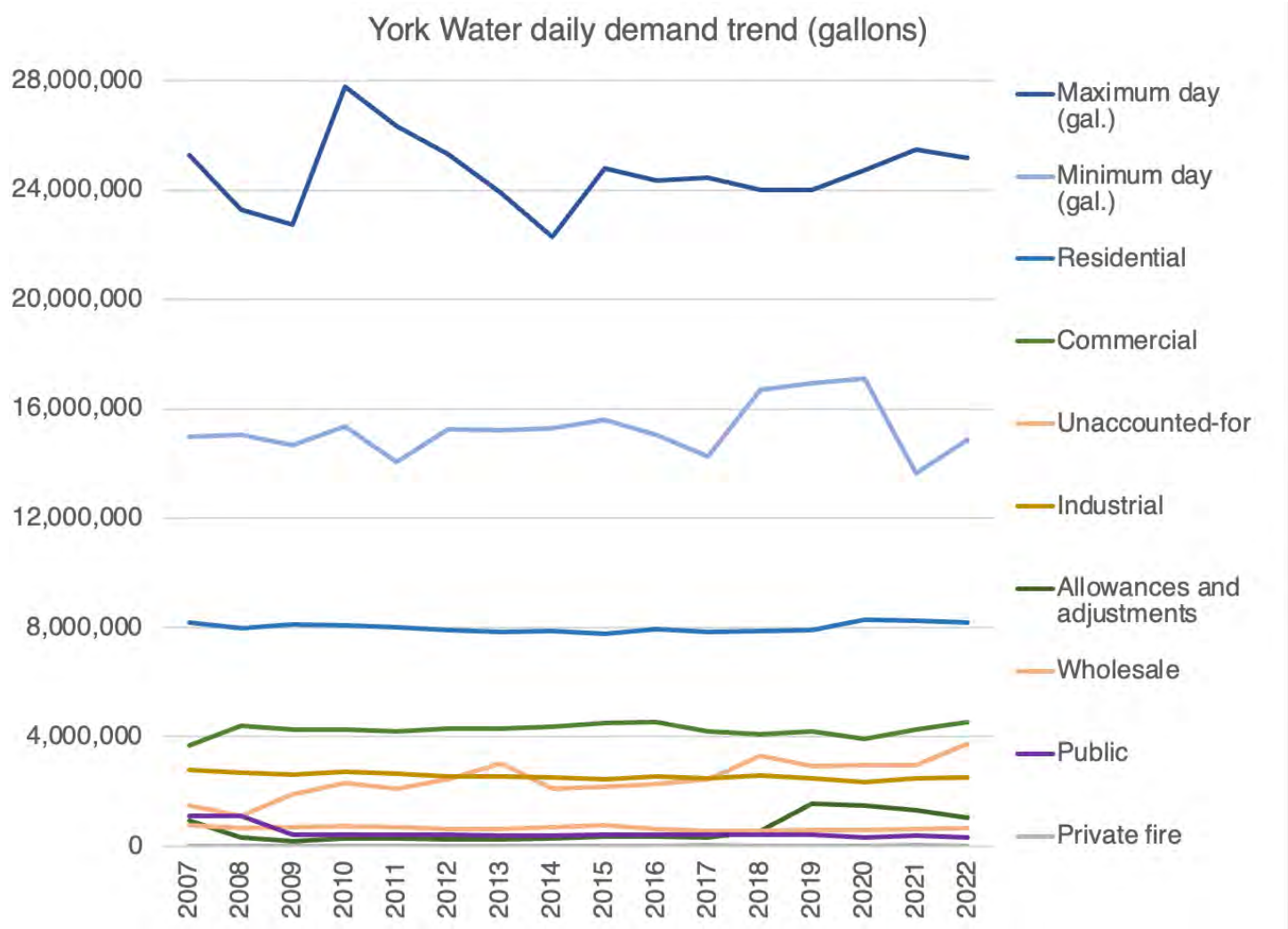


27-Water withdrawals by month

	S.B. Codorus Creek	Susquehanna River	Well 1 Carroll	Well 2 Carroll	Well 1 E. Cumberland	Well 2 E. Cumberland	Well 3 W. Cumberland	Well 5 W. Cumberland	Total	High and low
Jan	617,991,000	0	256,000	265,000	441,555	437,267	440,931	282,069	620,113,822	
Feb	513,969,000	1200000	237,000	215,000	390,862	387,086	370,872	237,128	517,006,948	
Mar	565,512,000	1,500,000	272,000	0	432,854	427,443	371,824	234,176	568,750,297	
Apr	554,611,000	1,300,000	268,000	0	420,116	414,945	348,346	227,654	557,590,061	
May	622,325,000	1,300,000	296,000	0	432,218	425,672	387,426	244,574	625,410,890	
Jun	612,517,000	1,400,000	324,000	0	416,895	409,575	391,285	251,715	615,710,470	
Jul	658,676,000	0	496,000	0	441,120	428,455	389,167	247,833	660,678,575	High
Aug	631,133,000	1,200,000	763,000	0	433,243	423,082	365,983	234,017	634,552,325	
Sep	614,751,000	600,000	866,000	0	427,086	418,172	463,530	297,470	617,823,258	
Oct	626,449,000	1200000	851,000	0	454,551	443,153	464,983	297,017	630,159,704	
Nov	499,138,000	900,000	683,000	0	439,297	429,142	383,246	244,754	502,217,439	
Dec	474,260,000	2,000,000	257,000	0	454,611	433,611	392,012	250,988	478,048,222	Low
	6,991,332,000	12,600,000	5,569,000	480,000	5,184,408	5,077,603	4,769,605	3,049,395	7,028,062,011	



5.5 York: demand trends



Q. On what day of the year is water usage often the lowest – and why?

5.5 Exercise: weather normalization with demand attrition (simplified)

	Normal usage (-1% attrition)	Weather effect (+/- 5%)	Total gallons sold (000)	Price (000)	Revenues (000)	Revenue excess or deficit
Year 1	2,876	Normal	2,876	$10.88	$31,291	$0
Year 2	2,847	Dry	2,989	$10.88	$32,520	$1,229
Year 3	2,819	Normal	2,819	$10.88	$30,671	($620)
Year 4	2,791	Dry	2,931	$10.88	$31,889	$598
Year 5	2,763	Normal	2,763	$10.88	$30,061	($1,229)
Year 6	2,735	Wet	2,598	$10.88	$28,266	($3,025)
Year 7	2,708	Wet	2,573	$10.88	$27,994	($3,297)
Average	2,791	-	2,793	$10.88	$30,385	($906)
"New normal"	?	-	?	?	$31,291	$0

Q. What usage level should be used for the “new normal” and test year?

5.5 Exercise: weather normalization with demand attrition (simplified)

	Normal usage (-1% attrition)	Weather effect (+/- 5%)	Total gallons sold (000)	Price (000)	Revenues (000)	Revenue excess or deficit
Year 1	2,876	Normal	2,876	$10.88	$31,291	$0
Year 2	2,847	Dry	2,989	$10.88	$32,520	$1,229
Year 3	2,819	Normal	2,819	$10.88	$30,671	($620)
Year 4	2,791	Dry	2,931	$10.88	$31,889	$598
Year 5	2,763	Normal	2,763	$10.88	$30,061	($1,229)
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Year 7	2,708	Wet	2,573	$10.88	$27,994	($3,297)
Average	2,791	-	2,793	$10.88	$30,385	($906)
"New normal"	2,708	-	2,708	$11.56	$31,291	$0

Q. What usage level should be used for the “new normal” and test year?

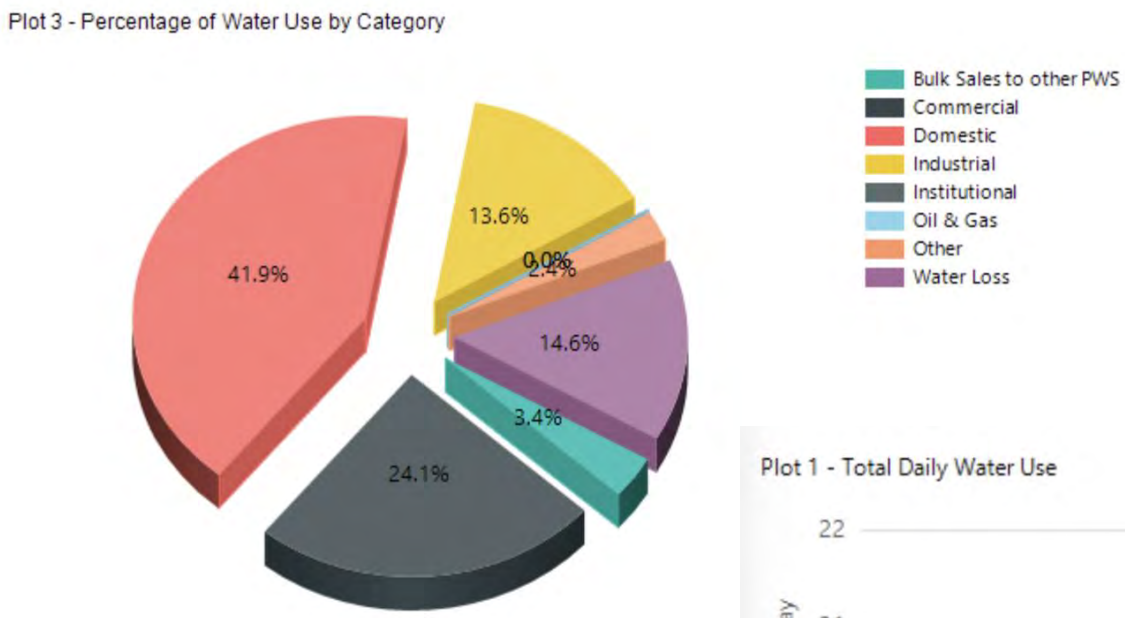
5.6 York: water deliveries to the system

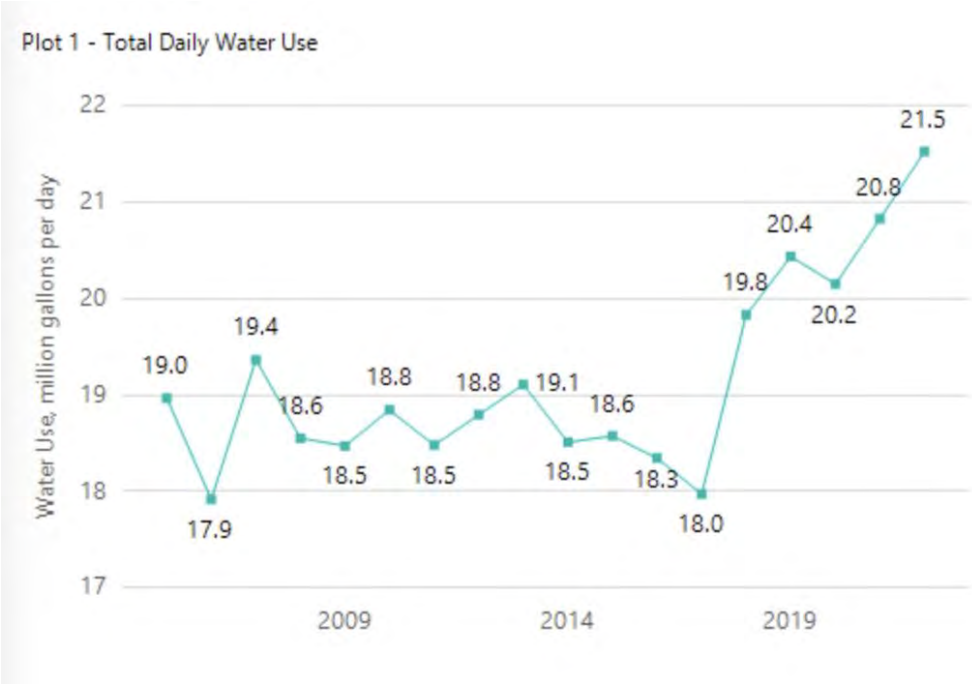
500. WATER DELIVERED INTO SYSTEM DURING YEAR

Every estimated value shall be supported by such detailed information as will permit a ready identification, analysis, & verification of all relevant facts. The Company shall be prepared to furnish to the Commission this detailed information.

Line No.	Description (a)	(Gallons) (b)	(gpd) (c)
1	**Water Delivered for Distribution & Sale:**		
2	Water Obtained from Company Sources	7,103,162,000	19,460,718
3	Water Obtained from Other Independent Utilities		
4	**Total Water Delivered**	**7,103,162,000**	19,460,718
5	**Metered Sales:**		
6	Residential	2,875,800,610	7,878,906
7	Commercial	1,497,437,500	4,102,568
8	Industrial	947,300,300	2,595,343
9	Public	152,764,500	418,533
10	Other Water Utilities	208,293,102	570,666
11	Private Fire Protection	7,242,201	19,842
12	Public Fire Protection		
13	Other Metered Sales Identify _____		
14	**Total Metered Sales**	5,688,838,213	15,585,858
15	**Unmetered Sales:**		
16	Residential		
17	Commercial		
18	Industrial		
19	Private Fire Protection		
20	Public Fire Protection		
21	Other Unmetered Sales Identify _____		
21	**Total Unmetered Sales**		
22	**Total Sales**	5,688,838,213	15,585,858
23	**Non-Revenue Usage Allowances:**		
24	**Authorized Unmetered Usage:**		
25	Main Flushing	72,413,863	198,394
26	Blow-off Use	71,698,416	196,434
27	Others: Company Use	51,848,774	142,052
28	Unauthorized Use		
29	Unavoidable Leakage _____ gpd/mile of main		
30	Adjustments:		
31	Located & Repaired Breaks in Mains & Services	6,335,050	17,356
32	Others Identify _____		
33	**Total Allowances & Adjustments**	202,296,103	554,236
34	**Unaccounted-for-Water**	**1,212,027,684**	
35	**Percentage Unaccounted-for-Water**	**17.1%**	

5.6 York: usage profile 2004-2022 (Pennsylvania DEP)





5.7 Non-revenue production

- Revenues from sales cover all costs of production (capital and operating)
  - Units not sold incur expenses that must be allocated and recovered from sales
  - Units produced may be lost, used for operations, provided without charge (e.g., for municipal fire protection), or sold to water customers
- Types of losses
  - Technical (physical) losses (water and energy): avoidable and unavoidable losses (leakage or line losses) from production to delivery
  - Nontechnical (commercial) losses (water and energy): non-account or non-revenue water delivered but not billed
- Non-revenue production is a prudence issue
  - A single indicator of technical, managerial, and financial capacity
  - No level of ”unaccounted-for" water is acceptable (AWWA)
  - System losses expressed as a percentage may not accurately reflect performance
  - Auditing methods are available for evaluation purposes (AWWA/IWA)
- Management methods
  - System auditing and leak detection
  - Remote sensors and monitoring
  - Meter testing and replacement
  - Advanced metering infrastructure

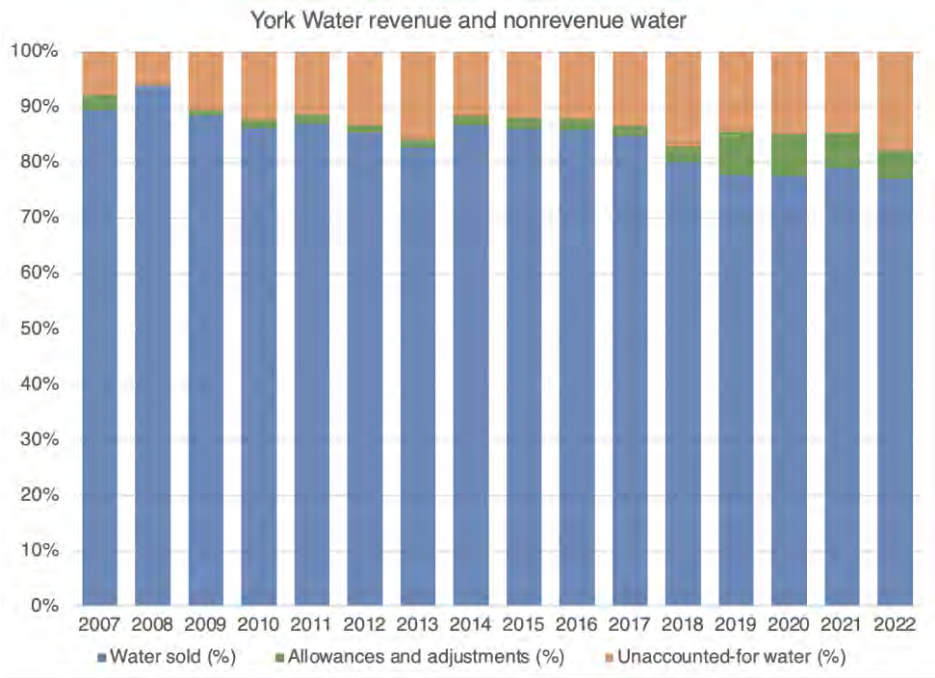
5.7 IWA/AWWA water balance model for auditing

<table>
<tr><td rowspan="2">Own Sources (Adjusted for known errors)</td><td rowspan="2">System Input</td><td>Water Exported</td><td colspan="3">Billed Water Exported</td><td>Revenue Water</td></tr>
<tr><td rowspan="9">Water Supplied</td><td rowspan="4">Authorized Consumption</td><td rowspan="2">Billed Authorized Consumption</td><td>Billed Metered Consumption (water exported is removed)</td><td rowspan="2">Revenue Water</td></tr>
<tr><td>Billed Unmetered Consumption</td></tr>
<tr><td rowspan="2">Unbilled Authorized Consumption</td><td>Unbilled Metered Consumption</td><td rowspan="7">Non-Revenue Water (NRW)</td></tr>
<tr><td>Unbilled Unmetered Consumption</td></tr>
<tr><td rowspan="5">Water Losses</td><td rowspan="3">Apparent Losses</td><td>Unauthorized Consumption</td></tr>
<tr><td>Customer Metering Inaccuracies</td></tr>
<tr><td>Systematic Data Handling Errors</td></tr>
<tr><td rowspan="3">Water Imported</td><td rowspan="3">Real Losses</td><td>Leakage on Transmission and/or Distribution Mains</td></tr>
<tr><td>Leakage and Overflows at Utility's Storage Tanks</td></tr>
<tr><td>Leakage on Service Connections</td></tr>
</table>

5.7 York: non-revenue water

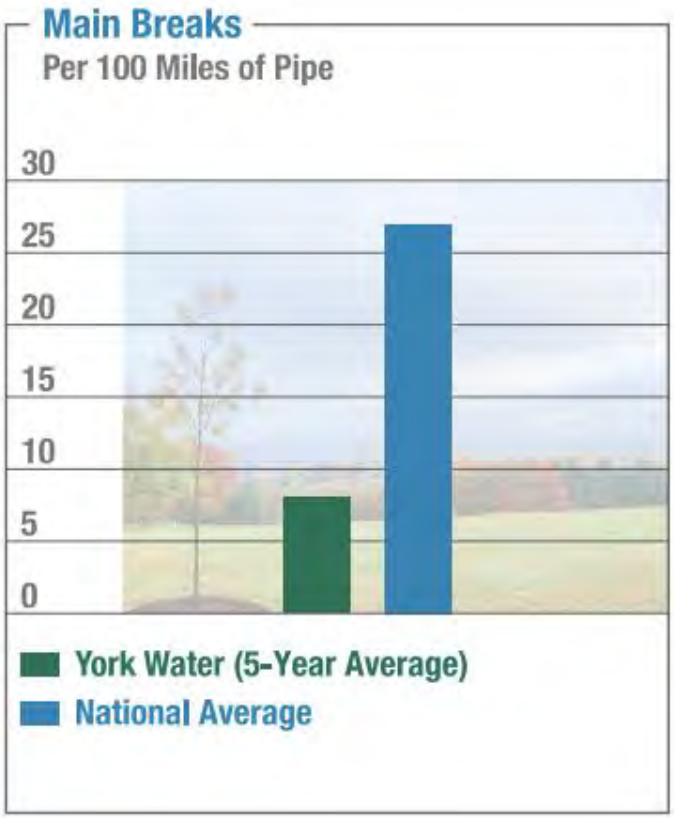
29-Non-revenue water production

Line no.	Item	2020	2019	2018
	York Water			
1	Total water delivered	7,296,000	7,357,390	7,103,162
2	Total metered and unmetered sales	5,664,212	5,717,609	5,688,838
3	Allowances and adjustments	545,949	570,636	202,296
4	Unaccounted-for water (gallons)	1,085,839	1,069,145	1,212,028
5				
6	York Water	2020	2019	2018
7	Water sold (%)	77.63%	77.71%	80.09%
8	Allowances and adjustments (%)	7.48%	7.76%	2.85%
9	Unaccounted-for water (%)	14.88%	14.53%	17.06%



5.7 York: comparative performance

6	York Water	2019	2018
7	Water sold (%)	77.71%	80.09%
8	Allowances and adjustments (%)	7.76%	2.85%
9	Unaccounted-for water (%)	14.53%	17.06%
10			
11	Aqua America		
16	Water sold (%)		79.06%
17	Unaccounted-for water (%)		20.94%
18			
19	Pennsylvania-America		
25	Water sold (%)		65.10%
26	Allowances and adjustments (%)		17.98%
27	Unaccounted-for water (%)		16.92%
28			
29	Artesian		
35	Water sold (%)		72.39%
36	Allowances and adjustments (%)		15.78%
37	Unaccounted-for water (%)		11.83%

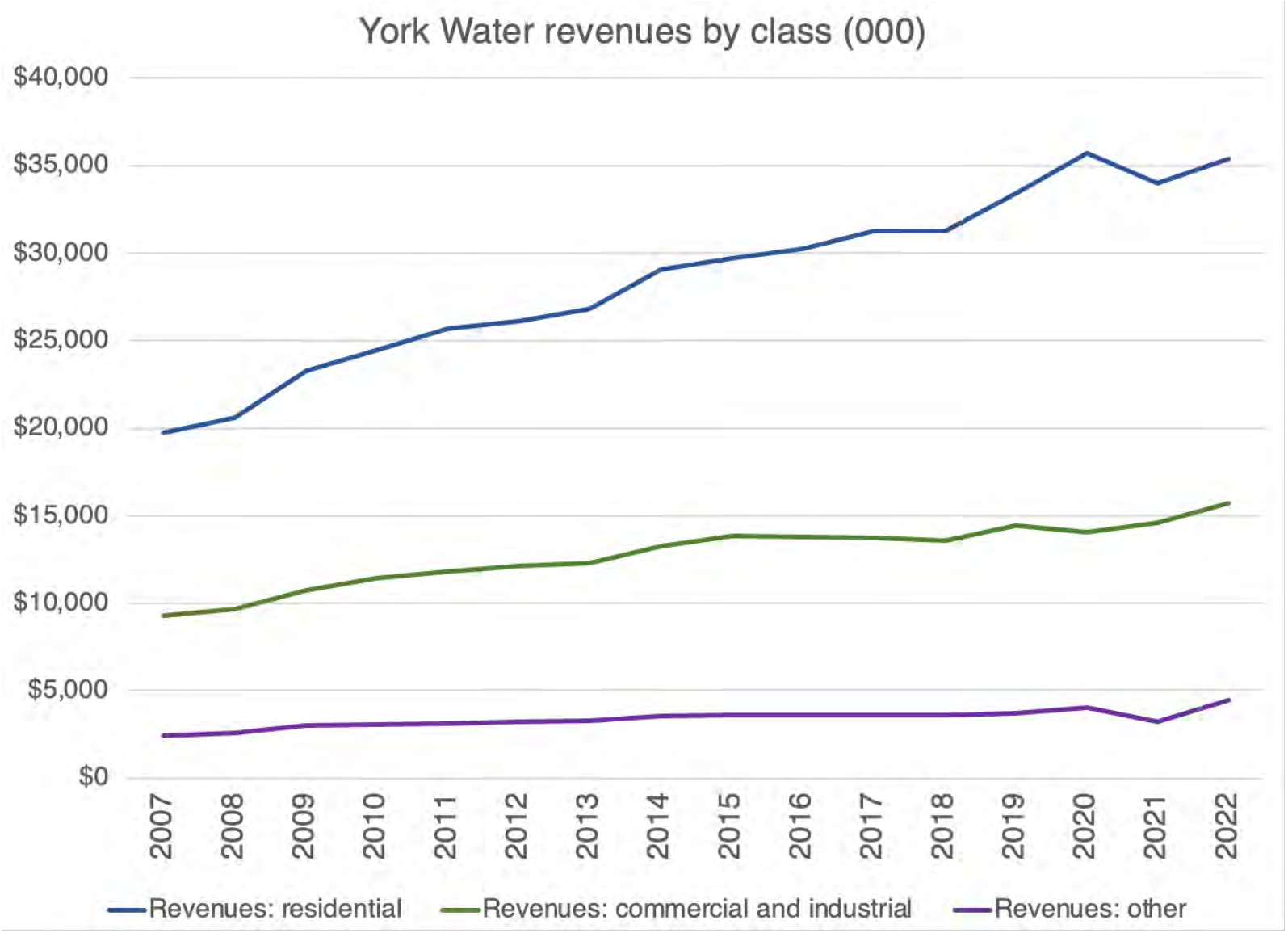


5.8 Price differentiation and subsidization

- Ratemaking always involves some pragmatic cost averaging ("smoothing")
  - Price differentiation ("discrimination") among users or usage can be "due or undue"
  - Due discrimination is based on cost-of-service criteria and informed judgment
  - Some differences are mostly ignored – e.g., locational (distance, gravity)
- Not all cost-sharing constitutes subsidization
  - A "subsidy" is also a form of financial support to address a social goal
  - May be intentional, acceptable, and targeted to alter economic behavior (incentives)
  - Subsidies are subjective and controversial – causation may be unclear
  - System subsidies are viewed positively, customer subsidies are viewed negatively
- Subsidies and transfers can occur
  - Between taxpayers and ratepayers (including grants, low-cost loans)
  - Between ratepayers within and across classes (including single-tariff rates)
  - Between utility ratepayers and shareholders
- Subsidies and transfers have consequences
  - Subsidies may transfer wealth – intentionally or unintentionally
  - May distort price signals and place distributional burdens on ratepayers

Q. What rate subsidy issues are being raised today?

5.8 York: revenues by class over time



5.8 York: effective prices by class (illustration)

30-Revenues by class and effective prices at present rates

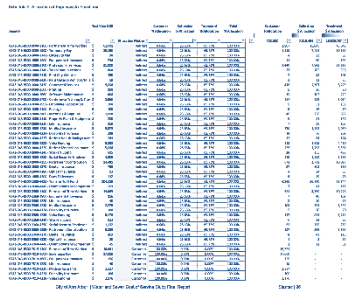
Line no.	Item	Residential	Commercial	Industrial	Private Fire	Public Fire	Public	Wholesale	Total
1	Customers	61,835	4,280	299	1,073	223	255	4	67,969
2	Gallons sold (000)	2,875,800	1,497,438	947,300	7,242	0	152,765	208,293	5,688,838
3	Revenues from sales	31,302,819	7,931,984	3,965,115	1,723,656	1,309,854	734,936	1,177,463	48,145,827
4	Percentage of gallons sold	50.6%	26.3%	16.7%	0.1%	0.0%	2.7%	3.7%	100.0%
5	Percentage of total sales revenues	65.0%	16.5%	8.2%	3.6%	2.7%	1.5%	2.4%	100.0%
6									
7	Effective price								
8	>Revenues/gallons sold (000)	10.88	5.30	4.19	238.01		4.81	5.65	8.46
9	>Ratio of class price to residential	1.00	0.49	0.38	21.87		0.44	0.52	0.78
10									
11	Revenue allocation								
12	>All customers pay same price	24,338,497	12,673,131	8,017,198	61,291	0	1,292,882	1,762,827	48,145,827
13	>Difference from actual allocation	(6,964,322)	4,741,147	4,052,083	(1,662,365)	(1,309,854)	557,946	585,364	(0)

Source: York Water PUC Annual Report (2018), Schedules 401, 402, and 500. Excludes other revenues from Schedule 401 due to negative value for

Q. Why are residential rates higher than nonresidential rates?

5.9 Cost-of-service studies

- Revenue requirements are established by the test-year analysis – a "cost study"
  - Total cost of service and revenue sufficiency
- Cost-of-service (or embedded or allocated c.o.s.) studies are used in ratemaking
  - To establish costs associated with each service according to customer classes (causality) and thus guide cost recovery – linking costs to who pays
- Used to establish and defend the reasonableness of cost allocation and rates
  - Reflect the principle that utility services should be provided at cost
  - Rely on accounting records as well as system operating data (“normalized”)
  - Each utility sector has manuals to support the process
- Results and impacts vary depending on inputs and methodology
  - Studies are informative but not determinative – also involve judgment
  - Methods provide reference points for ratemaking (e.g., embedded vs. marginal costs)
  - Policies and goals influence the choice of methods as well as rate design
- Key steps
  - Functionalization (activity-based accounting)
  - Classification by type of cost
  - Allocation to usage (customer class)



5.9 Cost-allocation methods

- Role of functionalization, classification, and allocation
  - Attribute and assign to customers the respective functional costs of providing service as identified for test year revenue requirements
  - Design rates by customer class to allow cost recovery while recognizing practical constraints and policy goals
- Methods used to allocate costs (variations)
  - Functional or average use
  - Commodity-demand
  - Embedded-direct
  - Fully distributed
  - Marginal cost
  - Peak responsibility (class or system)
  - Base-extra capacity or average-excess
- Base-extra capacity method is commonly used in the water sector
  - Customer (service) costs
  - Base costs: average-day demand
  - Extra capacity: maximum-day demand
  - Fire protection: peak-hour demand

Schedule 2. Allocation of Expenses to Functions

Agency	Test Year COS	Allocation Method	Customer % Allocation	Collection % Allocation	Treatment % Allocation	Total % Allocation	Customer $ Allocation	Collection $ Allocation	Treatment $ Allocation
0043-046-8500-1000-1100- Permanent Time Worked	$ 63,905	Indirect	4.64%	25.63%	69.73%	100.00%	2,967	16,045	43,643
0043-046-8500-1000-1200- Temporary Pay	$ 29,130	Indirect	4.64%	25.63%	69.73%	100.00%	1,353	7,461	20,313
0043-046-8500-1000-1741- Longevity Pay	$ 90	Indirect	4.64%	25.63%	69.73%	100.00%	4	23	63
0043-046-8500-1000-1800- Equipment Allowance	$ 234	Indirect	4.64%	25.63%	69.73%	100.00%	11	60	163
0043-046-8500-1000-2100- Professional Services	$ 31,000	Indirect	4.64%	25.63%	69.73%	100.00%	1,440	7,945	21,615
0043-046-8500-1000-2240- Telecommunications	$ 800	Indirect	4.64%	25.63%	69.73%	100.00%	37	205	558
0043-046-8500-1000-2410- Rent City Vehicles	$ 150	Indirect	4.64%	25.63%	69.73%	100.00%	7	38	105
0043-046-8500-1000-2420- Rent Outside Vehicles/Mile	$ 50	Indirect	4.64%	25.63%	69.73%	100.00%	2	13	35
0043-046-8500-1000-2430- Contracted Services	$ 9,000	Indirect	4.64%	25.63%	69.73%	100.00%	418	2,307	6,275
0043-046-8500-1000-2560- Printing	$ 150	Indirect	4.64%	25.63%	69.73%	100.00%	5	26	70
0043-046-8500-1000-2660- Software Maintenance	$ 400	Indirect	4.64%	25.63%	69.73%	100.00%	19	103	279
0043-046-8500-1000-2700- Conference Training & Tran	$ 2,960	Indirect	4.64%	25.63%	69.73%	100.00%	137	759	2,064
0043-046-8500-1000-2951- Employee Recognition	$ 200	Indirect	4.64%	25.63%	69.73%	100.00%	9	51	138
0043-046-8500-1000-3100- Postage	$ 100	Indirect	4.64%	25.63%	69.73%	100.00%	5	26	70
0043-046-8500-1000-3400- Materials & Supplies	$ 1,900	Indirect	4.64%	25.63%	69.73%	100.00%	46	256	697
0043-046-8500-1000-3640- Property Plant & Equipmen	$ 200	Indirect	4.64%	25.63%	69.73%	100.00%	9	51	138
0043-046-8500-1000-4120- Life Insurance	$ 130	Indirect	4.64%	25.63%	69.73%	100.00%	7	38	105
0043-046-8500-1000-4130- Medical Insurance	$ 5,823	Indirect	4.64%	25.63%	69.73%	100.00%	270	1,492	4,060
0043-046-8500-1000-4134- Disability Insurance	$ 298	Indirect	4.64%	25.63%	69.73%	100.00%	14	76	208
0043-046-8500-1000-4137- Retiree Health Savings Acc	$ 248	Indirect	4.64%	25.63%	69.73%	100.00%	12	64	174
0043-046-8500-1000-4138- Veba Funding	$ 6,153	Indirect	4.64%	25.63%	69.73%	100.00%	285	1,578	4,290
0043-046-8500-1000-4139- Retiree Medical Insurance	$ 5,964	Indirect	4.64%	25.63%	69.73%	100.00%	276	1,528	4,156
0043-046-8500-1000-4140- Workers Comp	$ 405	Indirect	4.64%	25.63%	69.73%	100.00%	18	103	282
0043-046-8500-1000-4150- Social Security-Employer	$ 4,808	Indirect	4.64%	25.63%	69.73%	100.00%	223	1,232	3,352
0043-046-8500-1000-4159- Retirement Contribution	$ 14,481	Indirect	4.64%	25.63%	69.73%	100.00%	672	3,712	10,097
0043-046-8500-1000-4170- Dental Insurance	$ 788	Indirect	4.64%	25.63%	69.73%	100.00%	37	202	550
0043-046-8500-1000-4180- Optical Insurance	$ 90	Indirect	4.64%	25.63%	69.73%	100.00%	4	23	63
0043-046-8500-1000-4180- Dues & Licenses	$ 112	Indirect	4.64%	25.63%	69.73%	100.00%	5	29	78
0043-046-8500-1000-4623- Transfer To IT Fund	$ 104,328	Indirect	4.64%	25.63%	69.73%	100.00%	4,845	26,740	72,744
0043-046-8500-1000-4640- Unemployment Compensat	$ 128	Indirect	4.64%	25.63%	69.73%	100.00%	7	41	111
0043-046-8500-1360-1100- Permanent Time Worked	$ 34,968	Indirect	4.64%	25.63%	69.73%	100.00%	681	3,760	10,228
0043-046-8500-1360-1800- Equipment Allowance	$ 156	Indirect	4.64%	25.63%	69.73%	100.00%	7	40	109
0043-046-8500-1360-4120- Life Insurance	$ 40	Indirect	4.64%	25.63%	69.73%	100.00%	2	10	28
0043-046-8500-1360-4130- Medical Insurance	$ 2,238	Indirect	4.64%	25.63%	69.73%	100.00%	103	573	1,562
0043-046-8500-1360-4134- Disability Insurance	$ 108	Indirect	4.64%	25.63%	69.73%	100.00%	5	28	75
0043-046-8500-1360-4138- Veba Funding	$ 3,176	Indirect	4.64%	25.63%	69.73%	100.00%	147	814	2,214
0043-046-8500-1360-4140- Workers Comp	$ 132	Indirect	4.64%	25.63%	69.73%	100.00%	6	34	92
0043-046-8500-1360-4150- Social Security-Employer	$ 1,132	Indirect	4.64%	25.63%	69.73%	100.00%	53	290	789
0043-046-8500-1360-4159- Retirement Contribution	$ 3,389	Indirect	4.64%	25.63%	69.73%	100.00%	157	869	2,363
0043-046-8500-1360-4170- Dental Insurance	$ 169	Indirect	4.64%	25.63%	69.73%	100.00%	8	45	118
0043-046-8500-1360-4180- Optical Insurance	$ 20	Indirect	4.64%	25.63%	69.73%	100.00%	1	5	14
0043-046-8500-1360-4640- Unemployment Compensat	$ 45	Indirect	4.64%	25.63%	69.73%	100.00%	2	12	31
0043-046-8500-7015-1100- Permanent Time Worked	$ 16,661	Customer	100.00%	0.00%	0.00%	100.00%	16,661	-	-
0043-046-8500-7015-1601- Severance Pay	$ 17,000	Customer	100.00%	0.00%	0.00%	100.00%	17,000	-	-
0043-046-8500-7015-1800- Equipment Allowance	$ 156	Customer	100.00%	0.00%	0.00%	100.00%	156	-	-
0043-046-8500-7015-4120- Life Insurance	$ 40	Customer	100.00%	0.00%	0.00%	100.00%	40	-	-
0043-046-8500-7015-4130- Medical Insurance	$ 2,237	Customer	100.00%	0.00%	0.00%	100.00%	2,237	-	-
0043-046-8500-7015-4134- Disability Insurance	$ 108	Customer	100.00%	0.00%	0.00%	100.00%	103	-	-
0043-046-8500-7015-4138- Veba Funding	$ 3,176	Customer	100.00%	0.00%	0.00%	100.00%	3,176	-	-
							723,082	7,719,404	16,625,797

City of Ann Arbor | Water and Sewer Cost of Service Study Final Report

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5.9 Cost-allocation considerations

- Importance of “cost knowledge” to sustainability (see Part 1)
  - Uniform systems of accounts (USoA)
  - Accounting informs both revenue requirements and cost allocation
  - Accounting rules are devised by national standards boards (FASB and GASB)
- Billing determinants are the inputs used to calculate the bill
  - Quantity (volume) consumed
  - Quality differentiation (including reliability)
  - Spatial or “zonal” considerations (distance)
  - Temporal considerations (hour, day, season)
  - Socioeconomic characteristics and environmental impacts
- Demand-allocation factors are used to assign costs
  - Based on weighted contributions of user classes to average and peak demand
  - Ordering of types of costs may matter – what is “base” vs. “extra”?
  - Sensitivity analysis may be useful to check for various influences
- Distribution of *revenues* is not a valid method for allocating *expenses*
  - Expenses are allocated based on the cost to provide a service

5.9 York: cost-of-service study

- ISSUE ¶41. Wastewater cost-of-service study
  - In future base rate proceedings, York will present a wastewater allocated cost-of-service study.
  - York indicated that it had not prepared a separate allocated cost of service study for its wastewater operations, because its level of revenues is comparatively small…
  - I&E indicated similar support for this settlement provision and indicated that it had recommended that York allocate a reasonable portion of rate case expense, common plant and other rate base items to the wastewater operations in the next base rate case.
  - This recommendation was made because I&E felt a proper allocation would enable the Commission to determine the true cost of York's wastewater operations and would result in a more accurate disclosure of the rate subsidy provided by the water operations. I&E indicated that York's agreement to present a wastewater allocated cost of service study adequately addressed I&E's concerns.

THE YORK WATER COMPANY ACQUIRES WASTEWATER PROVIDER MESCO, INC.

February 1, 2024

5.10 Cost classification

- Direct costs
  - Assigned to and recovered from individual customers receiving the service
- Customer (service) costs
  - Vary with customers but not with usage (e.g., meters, billing, other customer services)
  - Can be allocated by weighted average of costs for metering and billing
- Capacity (network infrastructure or demand) costs
  - Fixed in the short term and includes capital and O&M costs of network systems
  - Vary with aggregate demand over the long term (treatment, storage, distribution)
  - Can be recovered by availability, readiness-to-serve, facilities, and demand charges
  - Allocated by peaking factors and other determinants of usage (weighted)
- Commodity (resource) costs
  - Variable in short term and continuously with volumetric usage over time
  - Can be recovered by time-variant usage charges (including dynamic)
  - Allocated by actual consumption of resources (water, energy)
- Common and joint costs are challenging to allocate
  - Common cost (across organization – such as general plant) and joint cost of production (two services hard to allocate)
  - Allocated according to set of allocation rules – tied to accounting treatment of related plant, customers, usage, etc.

5.10 Cost functionalization and classification (simplified)

Cost functionalization		Cost classification*	Cost allocation**
Contractual services ($)	Opex	Direct	Actual billed directly
Purchased water and fuel	Opex	Commodity	Metered usage
Customer accounts, metering, billing, revenue-related	Capex / Opex	Customer	By class in proportion to customers or bills
Source-of-supply facilities, raw water storage	Capex / Opex	Capacity	Average-day and maximum-day demand
Transmission lines, water treatment plants	Capex / Opex	Capacity	Maximum-day demand
Distribution mains, pumping stations, treated water storage	Capex / Opex	Capacity	Maximum-day and peak-hour demand
General and intangible plant, overhead, programs, taxes	Capex / Opex	Capacity	By class in proportion to customers, usage, other

* Capacity costs are fixed in the short term and variable in the long term.
** Methods and practices vary.

5.10 York: functionalizing costs (plant and expenses)

33-Functional allocation of plant and expenses

Line no.	Item	Plant		Operation	Maintanence	Other	Op. Expense		% Plant	% Expense
1	Transmission and Distribution Plant	286,093,812		1,600,774	1,937,143		3,537,917		76.9%	20.2%
2	Source of Supply and Pumping Plant	42,612,385		179,737	311,133		490,870		11.5%	2.8%
3	Water Treatment Equipment	23,135,108		1,058,956	327,595		1,386,551		6.2%	7.9%
4	General Plant	20,027,814							5.4%	
5	Intangible Plant	10,220							0.0%	
6	Miscellaneous					3,196,347	3,196,347			18.3%
7	Administrative and General					2,433,408	2,433,408			13.9%
8	Purchases*					2,411,371	2,411,371			13.8%
9	Employee Pensions and Benefits					1,622,138	1,622,138			9.3%
10	Customer Accounts					1,009,687	1,009,687			5.8%
11	Insurance					811,590	811,590			4.6%
12	Rental and Transportation					579,167	579,167			3.3%
13	TOTALS	371,879,339		2,839,467	2,575,871	12,063,708	17,479,046		100.0%	100.0%

Source: York Water PUC Annual Report (2018), Schedules 201, 407, and 409.

* Includes purchased water, purchased power, fuel for power production, chemicals, and materials and supplies

Q. What functions drive the cost of a water system – and why?

5.11 Cost allocation by customer class

- Costs are averaged within broad customer classes temporally and spatially
  - Individualized rates (vs. averaging) generally are not used (impractical)
  - Higher granular methods may be burdensome and raise issues of fairness
  - Zonal prices are sometimes used to take location into account (e.g., pressure zones)
  - Time-variant rates reduce cost averaging for peak and off-peak periods
- Cost allocation is based on the impact of usage on facilities
  - Costs must be allocated to “revenue-producing” activities (sales)
  - Rules are needed to allocate common or joint costs
  - System demand ratios are used as allocators
- Customer-specific costs and rates
  - System-development charges (“growth should pay for growth”)
  - Special or negotiated contracts for high-volume unique-profile customers
- Customers classes (R/C/I) – may be too general and could become obsolete
  - Artifact of zoning and property tax methods
  - Masks substantial variation within classes – more so with aggregation
  - Re-classification should be logical, meaningful, and data-driven (AMI)

5.11 Customer classes and billing distribution (traditional)

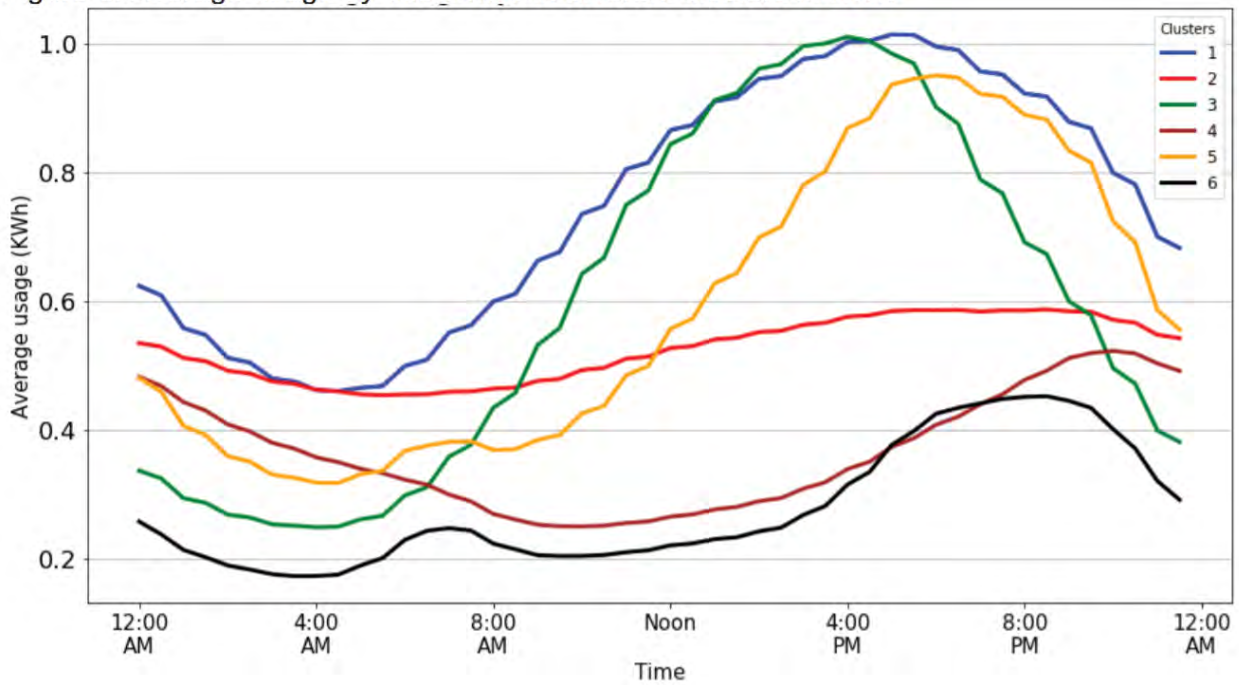
Residential
Single family
Multi-family
Nonresidential*
Commercial
Industrial
Wholesale
Agricultural
Public authorities
Special use (street lighting, irrigation, public and private fire protection)

Fig. 8 Frequency distribution of DWU among 50 houses

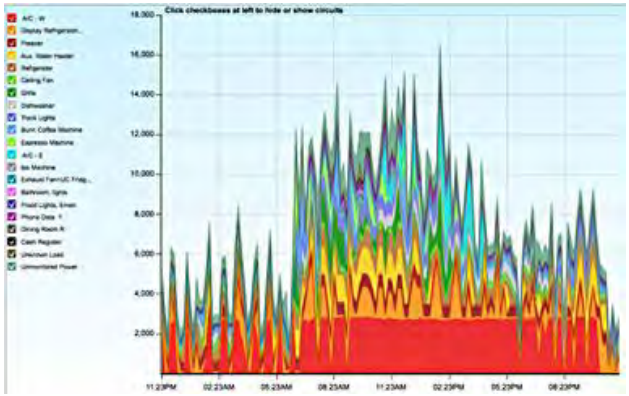
** For water, customer classes and tariffs are differentiated by meter size.*

5.11 Coincident and non-coincident peaking (electricity)

Figure 5: Average usage by customers in different clusters in KWh



Source: energynews.us



5.11 Poll: cost-of-service studies

- Which of the following is **not** a purpose of cost-of-service studies?

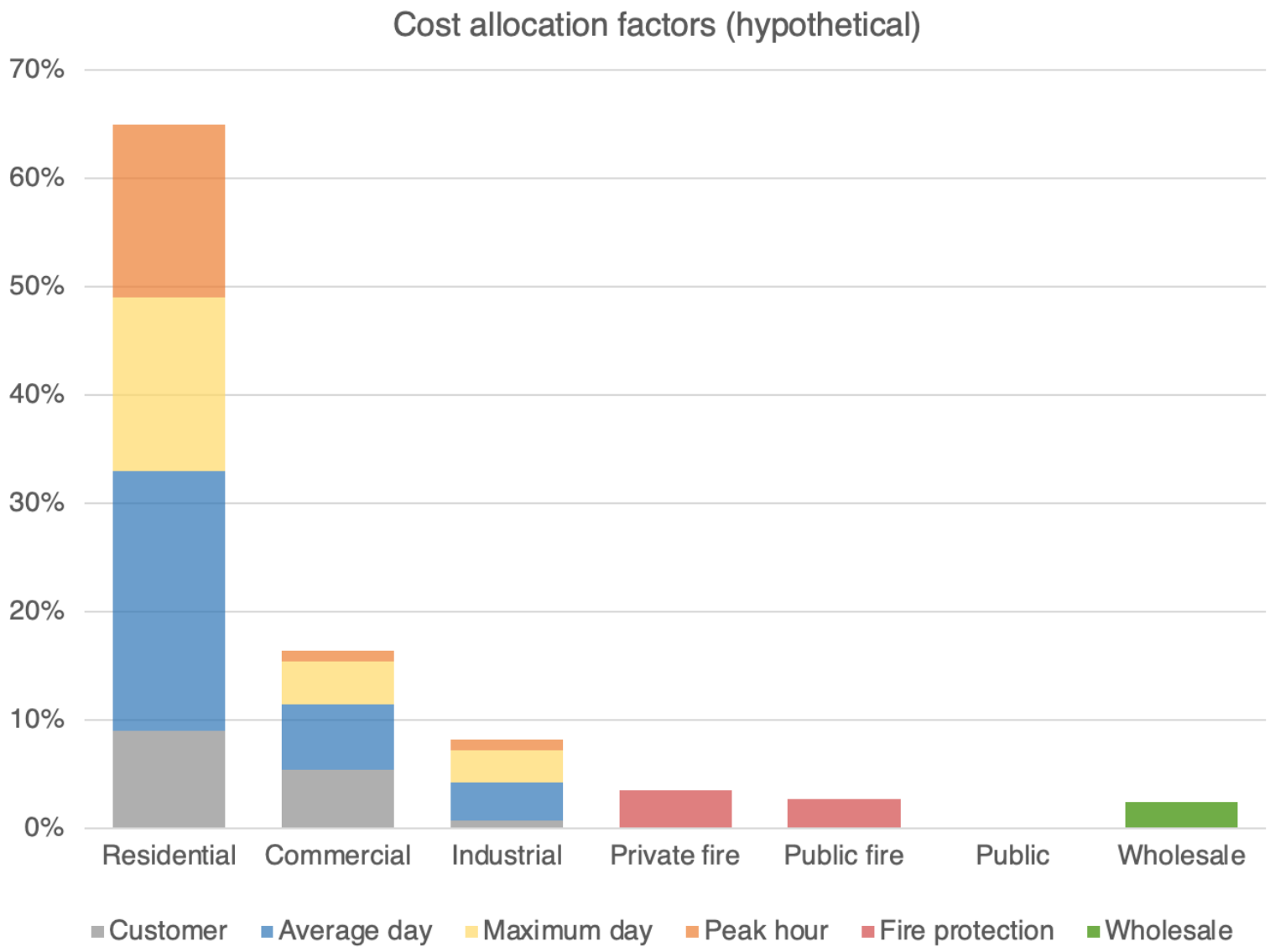
A. To distinguish embedded and marginal costs

B. To evaluate the relationship of costs to demand

C. To assign costs to customer classes

D. To establish a utility's revenue requirements

5.11 Water demand and cost of service (hypothetical)



5.11 York: allocation factors (hypothetical)

34-Allocation factors for revenues under present rates (hypothetical)

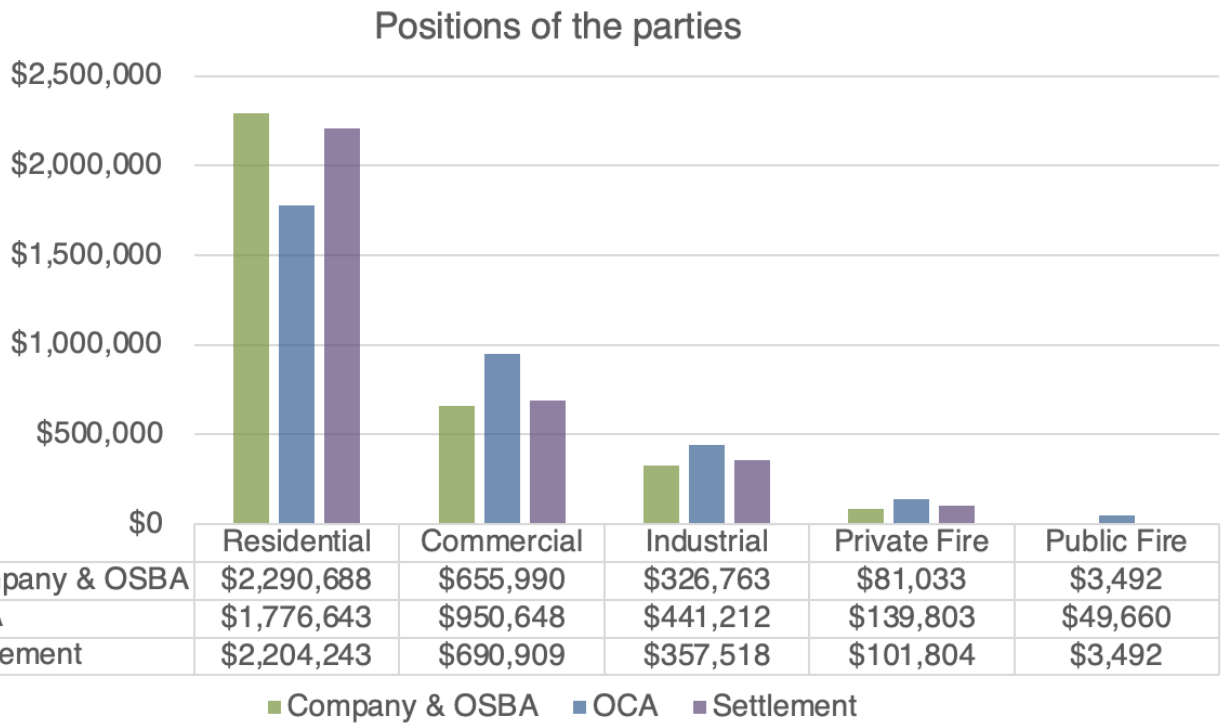
Line no.		Residential	Commercial	Industrial	Private fire	Public fire	Public	Wholesale		Total
1	ALLOCATION FACTORS									
2	Customer	0.0902	0.0547	0.0074						0.1523
3	Average day	0.2400	0.0600	0.0350						0.3350
4	Maximum day	0.1600	0.0400	0.0300						0.2300
5	Peak hour	0.1600	0.0100	0.0100						0.1800
6	Fire protection				0.0358	0.0272				0.0630
7	Public						0.0153			0.0153
8	Wholesale							0.0245		0.0245
9	Total	0.6502	0.1647	0.0824	0.0358	0.0272	0.0153	0.0245		1.0000
10										
11	REVENUE ALLOCATION									
12	Customer	4,341,156	2,635,943	354,178						7,331,277
13	Average day	11,554,998	2,888,750	1,685,104						16,128,852
14	Maximum day	7,703,332	1,925,833	1,444,375						11,073,540
15	Peak hour	7,703,332	481,458	481,458						8,666,249
16	Fire protection				1,723,656	1,309,854				3,033,510
17	Public						734,936			734,936
18	Wholesale							1,177,463		1,177,463
19	Total	31,302,819	7,931,984	3,965,115	1,723,656	1,309,854	734,936	1,177,463		48,145,827

Source: IPU-MSU hypthetical construct. Excludes other revenues from Schedule 401 due to negative value for 2018 (tax refund effect).

Q. Which customer class is driving peak demand – and why?

5.11 York: rate increase by customer class

- ISSUE ¶28. Increase in operating revenues and customer rates
  - Residential: 65.6%
  - Commercial: 20.6%
  - Industrial: 10.6%
  - Private Fire: 3.0%
  - Public Fire: 0.1%



	Residential	Commercial	Industrial	Private Fire	Public Fire
Company & OSBA	$2,290,688	$655,990	$326,763	$81,033	$3,492
OCA	$1,776,643	$950,648	$441,212	$139,803	$49,660
Settlement	$2,204,243	$690,909	$357,518	$101,804	$3,492

Q. What do the settlement rates reflect in terms of interclass cost allocation?

5.11 York: rate increase detail

36-Rate case revenue detail

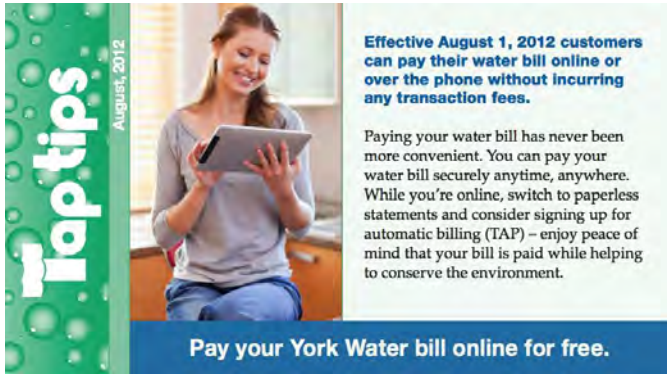
Line. no.		Revenues under present rates*		Revenues and proposed rates			Revenues under settlement rates		
1	Customer classification	Amount (Sch. J)		Amount (Sch. D)	Percent increase		Amount (Sch. K)	Amt. of increase	Percent increase
2	Residential gravity	8,910,814		10,263,422	15.2%		9,594,000	683,186	7.7%
3	Residential repumped	21,129,246		24,139,972	14.2%		22,650,303	1,521,057	7.2%
4	>Total	30,040,060		34,403,394	14.5%		32,244,303	2,204,243	7.3%
5									
6	Commercial gravity	3,334,992		3,795,823	13.8%		3,590,544	255,552	7.7%
7	Commercial repumped	6,079,930		6,868,128	13.0%		6,515,287	435,357	7.2%
8	>Total	9,414,922		10,663,951	13.3%		10,105,831	690,909	7.3%
9									
10	Industrial gravity	818,072		934,481	14.2%		884,146	66,074	8.1%
11	Industrial repumped	2,863,753		3,368,801	17.6%		3,155,197	291,444	10.2%
12	>Total	3,681,825		4,303,282	16.9%		4,039,343	357,518	9.7%
13									
14	Private fire gravity	654,010		698,217	6.8%		683,191	29,181	4.5%
15	Private fire repumped	1,132,943		1,243,055	9.7%		1,205,566	72,623	6.4%
16	>Total	1,786,953		1,941,272	8.6%		1,888,757	101,804	5.7%
17									
18	Public fire gravity	255,368		258,860	1.4%		258,860	3,492	1.4%
19	Public fire repumped	1,073,832		1,073,832	0.0%		1,073,832	0	0.0%
20	>Total	1,329,200		1,332,692	0.3%		1,332,692	3,492	0.3%
21									
22	Total sales	46,252,960		52,644,591	13.8%		49,610,926	3,357,966	7.3%
23	Other revenue	745,712		749,073	0.5%		749,073	3,361	0.5%
24	>Total	46,998,672		53,393,664	13.6%		50,359,999	3,361,327	7.2%

Source: York Water Settlement Order Schedule C (2019).

* Present base rate revenue from Schedule J (excludes DSIC and STAS surcharges).

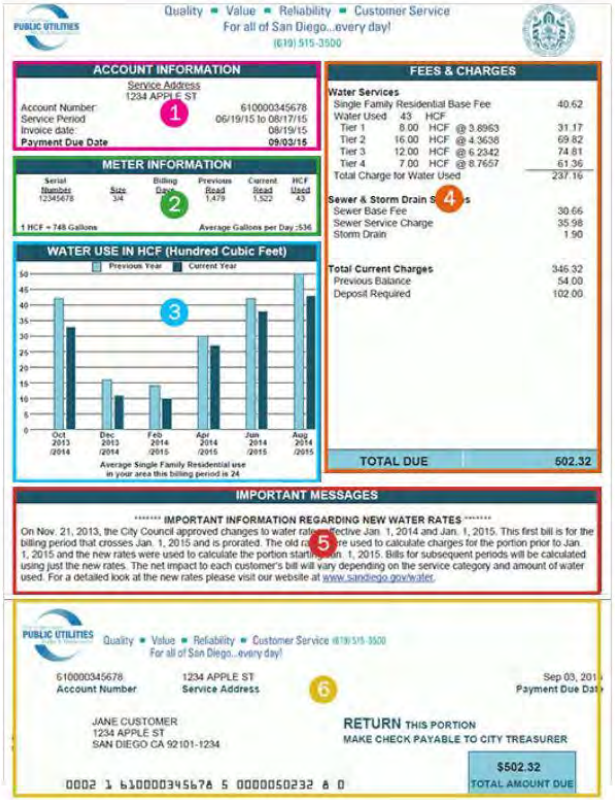
5.12 Metering and billing

- Metering is needed for volumetric usage-based pricing
  - Utility services are not considered “too cheap to meter”
  - Meter accuracy and maintenance are important – aging can favor customers
  - Submetering may be used for multi-family housing with tradeofffs
- Most utilities bill monthly (some quarterly)
  - Monthly provides timely price signals – relevant to seasonal usage
  - Estimated bills are sometimes used
- Emerging technologies
  - Automatic meter reading (AMR) and advanced metering infrastructure (AMI)
  - Joint metering by energy and water utilities
  - Online billing information and payment



5.12 Cost assignment: the customer's bill

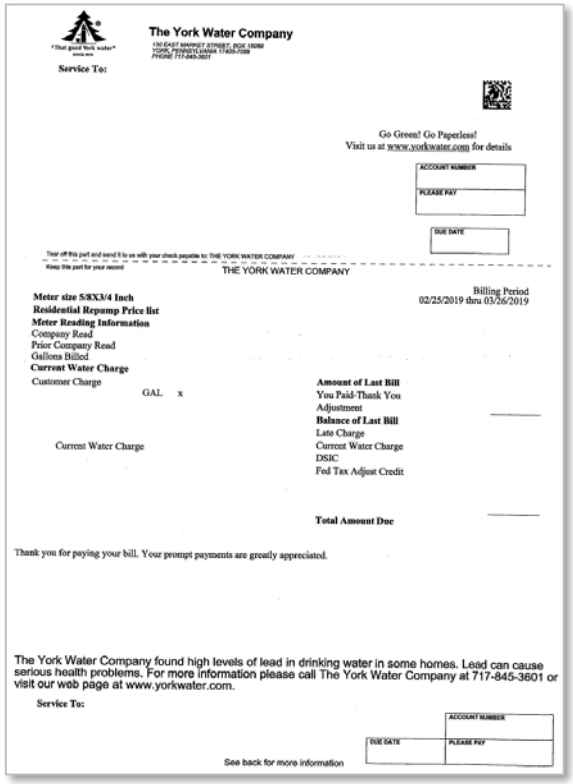
- Informed customers can make informed choices
- Types of charges on the bill
  - Fixed charges do not vary with usage
  - Variable charges vary with usage
  - Other charges and taxes
- Information provided on the bill
  - Usage trend, comparison usage, conservation ideas, assistance programs
  - Privacy issues include usage details, comparison with neighbors, marketing and consumer contact issues



5.12 Utility bill components

- Charges that reflect “base rates” in the tariff
  - Combination of approved fixed and variable (unit rate) charges plus allowed adjustments in the form of variable trackers or formulaic riders or surcharges
- Operating-cost adjustments
  - Approved mechanisms for adjusting rates provided for by tariff “clauses”
  - Fuel (for energy production) or other major inputs that meet criteria
  - Purchased energy and water (wholesale) – inter-utility allocation
  - Uncollectible expenses
- Capital-cost adjustments (more recent)
  - Surcharges for costs (e.g., DSIC)
- Other charges (or credits)
  - Taxes, assessments, and regulatory fees
  - Environmental surcharges (e.g., carbon tax)
  - Renewable energy surcharges
  - Direct charges (e.g., connection, hook-up, turn on or off)
  - Penalties (e.g., late payment)
  - Mark-up for service outside of city boundaries
  - Social or public-benefit programs (involuntary and voluntary)
  - On-bill charges for unbundled services and utility-financed loans
  - Charges related to revenue assurance (decoupling) or stabilization
  - Credits for energy or water savings according to special tariffs
  - Unbundled service fees (e.g., maintenance, wiring, plumbing, water heating or softening)

5.12 York: sample residential bill and resources



The York Water Company

130 EAST MARKET STREET, BOX 15089
YORK, PENNSYLVANIA 17405-7089
PHONE 717-845-3601

"That good York water"

Service To:

Go Green! Go Paperless!
Visit us at www.yorkwater.com for details

ACCOUNT NUMBER
PLEASE PAY
DUE DATE

Tear off this part and send it to us with your check payable to: THE YORK WATER COMPANY
Keep this part for your record

THE YORK WATER COMPANY

Meter size 5/8X3/4 Inch
Residential Repump Price list
Meter Reading Information
Company Read
Prior Company Read
Gallons Billed
Current Water Charge
Customer Charge
GAL x

Current Water Charge

Billing Period
02/25/2019 thru 03/26/2019

Amount of Last Bill
You Paid-Thank You
Adjustment
Balance of Last Bill
Late Charge
Current Water Charge
DSIC
Fed Tax Adjust Credit

Total Amount Due

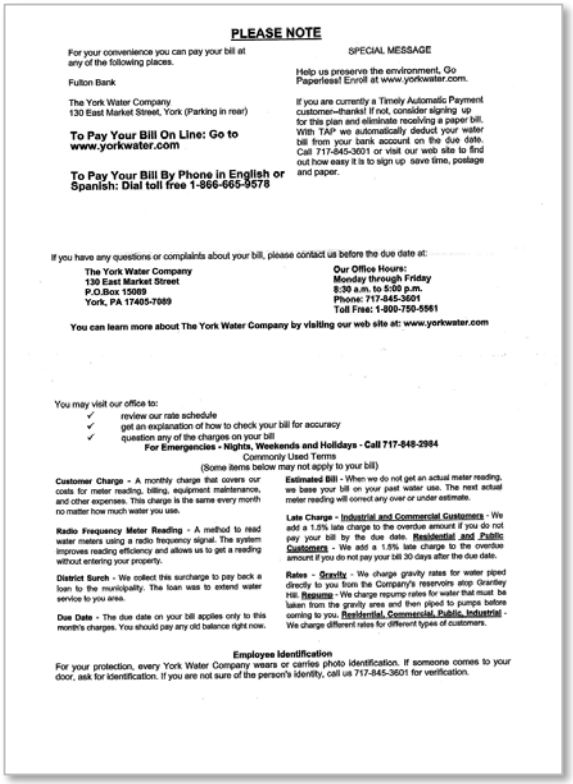
Thank you for paying your bill. Your prompt payments are greatly appreciated.

The York Water Company found high levels of lead in drinking water in some homes. Lead can cause serious health problems. For more information please call The York Water Company at 717-845-3601 or visit our web page at www.yorkwater.com.

Service To:

ACCOUNT NUMBER
DUE DATE
PLEASE PAY

See back for more information



PLEASE NOTE

For your convenience you can pay your bill at any of the following places.

Fulton Bank

The York Water Company
130 East Market Street, York (Parking in rear)

To Pay Your Bill On Line: Go to www.yorkwater.com

To Pay Your Bill By Phone in English or Spanish: Dial toll free 1-866-665-9578

SPECIAL MESSAGE

Help us preserve the environment, Go Paperless! Enroll at www.yorkwater.com.

If you are currently a Timely Automatic Payment customer--thanks! If not, consider signing up for this plan and eliminate receiving a paper bill. With TAP we automatically deduct your water bill from your bank account on the due date. Call 717-845-3601 or visit our web site to find out how easy it is to sign up save time, postage and paper.

If you have any questions or complaints about your bill, please contact us before the due date at:

The York Water Company
130 East Market Street
P.O.Box 15089
York, PA 17405-7089

Our Office Hours:
Monday through Friday
8:30 a.m. to 5:00 p.m.
Phone: 717-845-3601
Toll Free: 1-800-750-5561

You can learn more about The York Water Company by visiting our web site at: www.yorkwater.com

You may visit our office to:
- ✓ review our rate schedule
- ✓ get an explanation of how to check your bill for accuracy
- ✓ question any of the charges on your bill

For Emergencies - Nights, Weekends and Holidays - Call 717-848-2984

Commonly Used Terms
(Some items below may not apply to your bill)

Customer Charge - A monthly charge that covers our costs for meter reading, billing, equipment maintenance, and other expenses. This charge is the same every month no matter how much water you use.

Radio Frequency Meter Reading - A method to read water meters using a radio frequency signal. The system improves reading efficiency and allows us to get a reading without entering your property.

District Surch - We collect this surcharge to pay back a loan to the municipality. The loan was to extend water service to you area.

Due Date - The due date on your bill applies only to this month's charges. You should pay any old balance right now.

Estimated Bill - When we do not get an actual meter reading, we base your bill on your past water use. The next actual meter reading will correct any over or under estimate.

Late Charge - Industrial and Commercial Customers - We add a 1.5% late charge to the overdue amount if you do not pay your bill by the due date. Residential and Public Customers - We add a 1.5% late charge to the overdue amount if you do not pay your bill 30 days after the due date.

Rates - Gravity - We charge gravity rates for water piped directly to you from the Company's reservoirs atop Grantley Hill. Repump - We charge repump rates for water that must be taken from the gravity area and then piped to pumps before coming to you. Residential, Commercial, Public, Industrial - We charge different rates for different types of customers.

Employee Identification

For your protection, every York Water Company wears or carries photo identification. If someone comes to your door, ask for identification. If you are not sure of the person's identity, call us 717-845-3601 for verification.

FORMS & RESOURCES

- Application For Water Service
- End Water Service
- Service Line Protection Plan
- Bill Calculator & Tariff
- Water Supply Issues & Emergencies
- Water Meter Information
- Relevant Links
- Recent Bill Stuffers
- Consumer Confidence Report

5.12 York: sewer and refuse billing (2020)

City of York Sewer and Refuse

About Your New City of York Sewer and Refuse Bill

The City of York and the York Water Company are working together to streamline sewer and refuse billing for City of York sewer and refuse customers. Starting at the end of August 2020, City of York customers will now receive their sewer and refuse bill from the York Water Company.

Keep this for your record
Bill Date: 06/23/2020
Account Number: 111111-222222

THE YORK WATER COMPANY
Billing and Collection Agent for
The City of York

Account Summary	TOTAL
Previous Balance	N/A
Payment Received	N/A
Finance Charge	N/A
Adjustments	N/A
Balance Forward	N/A

Current Charges		Rate	Quantity	
Water Consumption	July 2020		3500 Gallons	
York City Refuse Residential EDU Rate		27.3500	1	27.35
York City Refuse Commercial EDU Rate		54.7000	1	54.70
York City Sewer Consumption Charge		0.0091	3500	31.85
Water Consumption	Aug. 2020		2700 Gallons	
York City Refuse Residential EDU Rate		27.3500	1	27.35
York City Refuse Commercial EDU Rate		54.7000	1	54.70
York City Sewer Consumption Charge		0.0091	2700	24.57
		Total Due by	07/18/2020	220.52

Due to vandalism at York City Hall and the impact to its Information Technology infrastructure, previous balance and payment information is currently not available (N/A as shown above). As the City of York recovers this data, the information on previous balance and payment information will be provided on future billings. Thank you for your patience as the City of York recovers and restores this information.

5.12 York: sample commercial bill

8 17401 999999 0

The York Water Company

130 EAST MARKET STREET, BOX 15089
YORK, PENNSYLVANIA 17405-7089
PHONE 717-845-3601

"That good York water"

00114885003929160010189 39

Service To: JOHN DOE
130 E MARKET ST
YORK, PA 17401

Go Green! Go Paperless!
Visit us at www.yorkwater.com for details

ACCOUNT NUMBER
999999 - 99999

PLEASE PAY
$1,018.93

JOHN DOE
130 E MARKET ST
YORK PA 17401

DUE DATE
02/09/2015

Tear off this part and send it to us with your check payable to: THE YORK WATER COMPANY

Keep this part for your record

THE YORK WATER COMPANY

Billing Period
12/09/2014 thru 01/09/2015

Meter size 1+1/2 Inch
Commercial Repump Price List
Meter Reading Information

Company Read	330,300
Prior Company Read	139,200
Gallons Billed	191,100

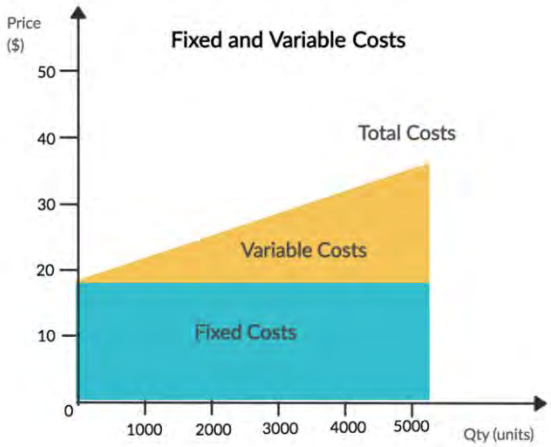
Current Water Charge

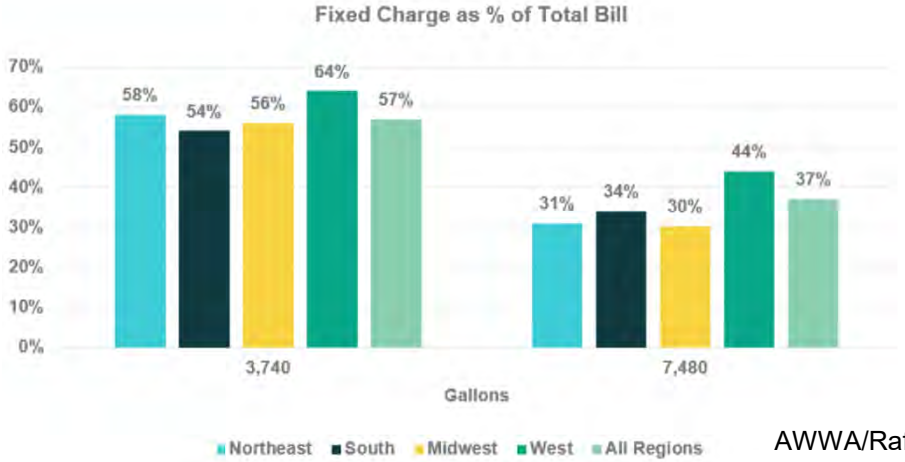
Customer Charge				47.80
5000	GAL	x	.006828	34.14
45000	GAL	x	.005801	261.05
141100	GAL	x	.003124	440.80

Amount of Last Bill	772.01
You Paid-Thank You	772.01
Adjustment	0.00
Balance of Last Bill	0.00
Late Charge	0.00

5.13 Fixed and variable costs

- Total cost of service is the sum of fixed and variable
  - Fixed costs do not vary with usage within a (generally shorter) time period
  - Variable costs vary with amount, location, and time of usage
  - A Coasian pricing solution is a two-part tariff with a fixed fee plus marginal-cost
- Short-run and long-run costs
  - In the short run, many costs are fixed – and marginal cost is low
  - In the long run, all costs are variable – potential avoidance
- Functional unbundling of infrastructure capacity and commodity costs
  - Restructured gas markets with growing interest in electricity and water
  - Both capacity and commodity costs are variable (volumetric) over time





AWWA/Raftelis

5.13 Fixed and variable charges

- Fixed and variable tariff charges may not match fixed and variable costs
  - "The mere existence of systemwide fixed costs doesn't justify fixed charges" (S. Borenstein, 2014)
  - Many if not most utilities recover a substantial portion fixed costs through variable charges ("absorption") – as do competitive firms
  - Cost classification guides design of fixed and variable charges but is not determinative
- Utilities favor fixed charges for recovery of network capacity costs
  - Environmental and consumer advocates tend to prefer variable to fixed charges
  - Improve price signals about costs and capacity requirements
  - Net metering for distributed energy poses new challenges for covering network costs
- Fixed charges are uncontrollable and unavoidable
  - A high proportion of the bill for low-volume customers
  - Consumer advocates also worry about higher bills overall and more disconnection

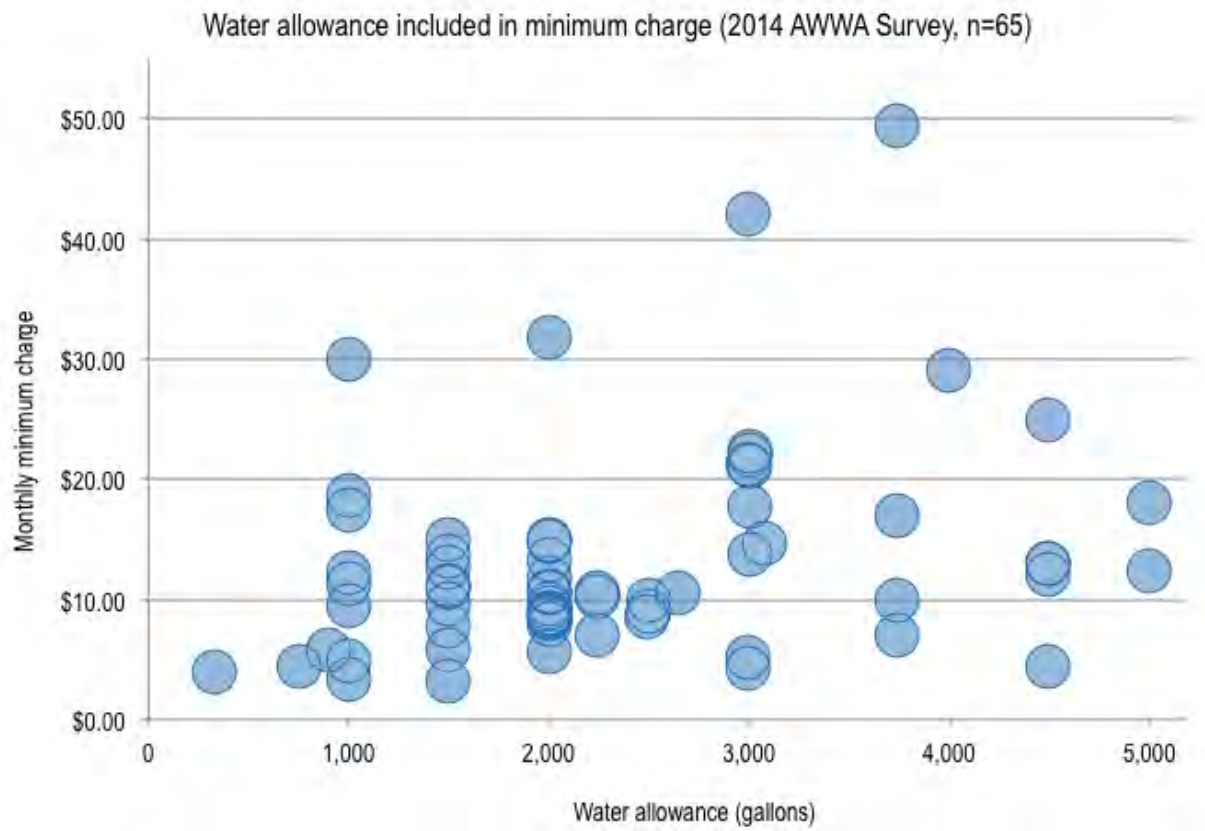
<table>
<tr><td colspan="2">Fixed (base) charge</td><td colspan="2">Variable (volumetric) charge</td></tr>
<tr><td>Customer costs</td><td colspan="2">Capacity costs</td><td>Commodity costs</td></tr>
</table>

5.13 Fixed vs. variable charges: tradeoffs

Recovering more costs from fixed charges	Recovering more costs from variable charges
Static view of infrastructure (more sunk costs)	Dynamic view of infrastructure (less sunk costs)
Enhances revenue stability (less sales revenue risk to utility)	Reduces revenue stability (more sales revenue risk to utility)
Weakens price signals (less resource efficiency)	Strengthens price signals (more resource efficiency)
Familiar & understandable but less acceptable (more predictable and less controllable)	Familiar & understandable but more acceptable (less predictable and more controllable)
Less affordable for low-income households (more regressive)	More affordable for low-income households (less regressive)
Encourages self supply and grid defection (may raise some costs)	Preserves grid supply and participation (may lower some costs)
Possible advantage for combined households (one fixed customer charge)	Possible stability from first blocks (relatively inelastic usage)

5.13 Fixed charge with a usage allowance

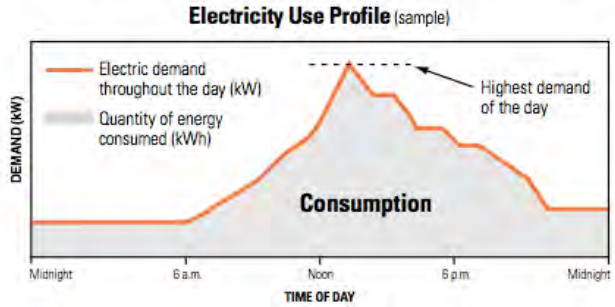
- Inclusion of a usage allowance in a fixed minimum bill
  - Might be useful to ensure universal service (equity)
  - Can undermine end-use efficiency – perhaps more so in energy
  - More appropriate for water given system and public health (water circulation, externalities), and resource renewability



5.13 Demand charges (electricity) ⓘ

- Demand drives capacity ("on-demand"), volume drives commodity usage
- Demand charges are typically based on a customer's incidental peak usage
  - Not on the system's co-incidental peak (vs. dynamic pricing)
  - Used for high-volume users but proposed for residential – requires demand metering
  - Energy usage is measured and metered in watt-hours over a period of time
  - Demand is measured in total watts at a given point in time
  - Have also been used in water where meter size also approximates demand by class
- Rationalized as a means of recovering fixed network costs
  - Analysts question effectiveness given sunk costs, weak price signals (Borenstein, 2017)
  - Consumer advocates question adverse bill impacts (Springe, 2015) – "gotcha rates"
  - Most consider less than efficient; some consider less than equitable (Borenstein)
  - Time-variant may be better for promoting efficiency

The electricity use diagram below shows the difference between ***energy (kWh)*** and ***demand (kW)***:



Source: WE Energies.

5.13 Metering and compensating solar "prosumers" ⓘ

- Net metering, feed-in tariffs, and value-of-solar rates
  - Using one meter: "net metering tariffs enable customers to use the electricity they generate in excess of their consumption at certain times to offset their use of electricity from the grid at other times" (EIA)
  - Using two meters: "feed-in tariffs guarantee customers "a set price from their utility for all of the electricity they generate and provide to the grid" (EIA)
  - Value-of-solar rates account for solar benefits to stakeholders net of costs (NREL)

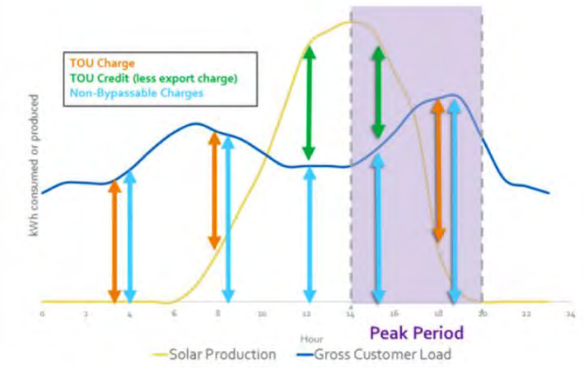
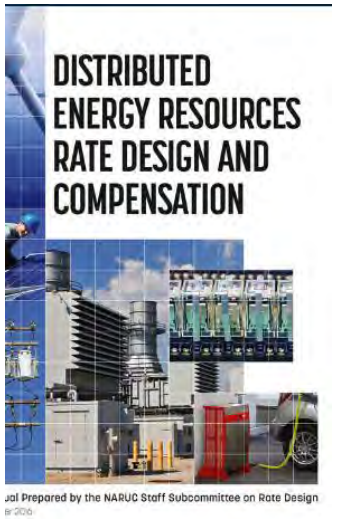


Chart 1: *Illustrative Example of Charges and Credits for a Typical DO Customer*

- How should self-supply be compensated?
  - Short-run avoided marginal cost of energy to the utility
  - Long-run avoided cost (including capacity) as fully embedded in tariff
  - Real-time net value based on time of use and possibly location – see inflow-outflow model (Michigan)



- Controversies
  - How to value access to and compensate the grid for buying, selling, and backup
  - Distributional impacts for participants and nonparticipants – incentives are also subsidies
  - Network issues should not be over-simplified as rate-design issues only

5.13 York: increase in residential fixed charge

- ISSUE ¶45. Residential customer charge
  - Rate design includes an increase to the residential (5/8" meter) customer charge to $16.25 per month, with equivalent percentage increases to other customer charges.
- Positions of the parties
  - York: increase residential customer charge from $16.00 to $18.50
  - OCA: Maintain residential customer charge at $16.00
  - Staff: Increase residential customer charge from $16.00 to $16.40

5.14 Evolution of generally accepted rate design

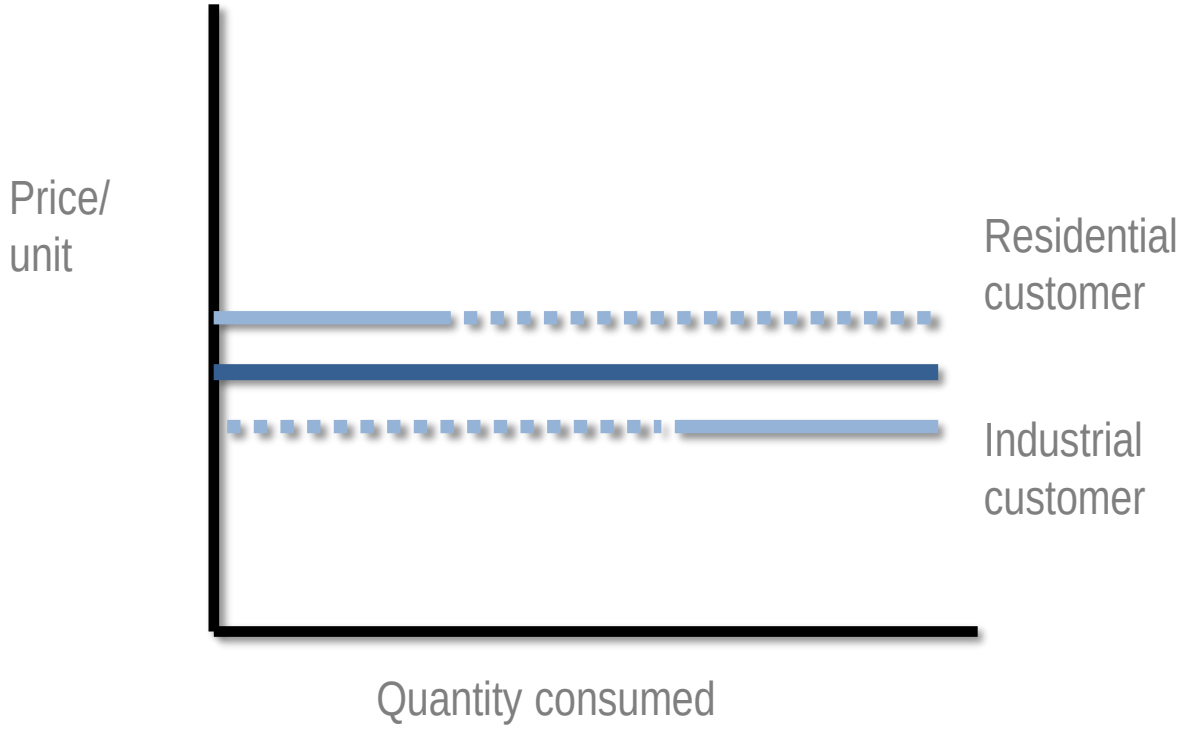
- Postage stamp rates (full cost socialization)
- Unmetered charges
  - Flat fees or charges for total usage
  - Property taxes by publicly owned water systems
  - Charges based on property values (UK)
  - Water-using fixtures (water) or occupancy
  - Wastewater services – equivalent units, metered water, strength
  - Stormwater management – impervious/impermeable surface

- Metered rates
  - Uniform by volume of usage
  - Block rates – decreasing and increasing
  - Time-variant and dynamic rates

- “Monthly plans”
  - Telecom – time and location no longer matter
  - Energy – budget billing, prepaid, fixed-rate contracts, even “free nights and weekends”

5.14 Uniform rate (not “flat rate”)

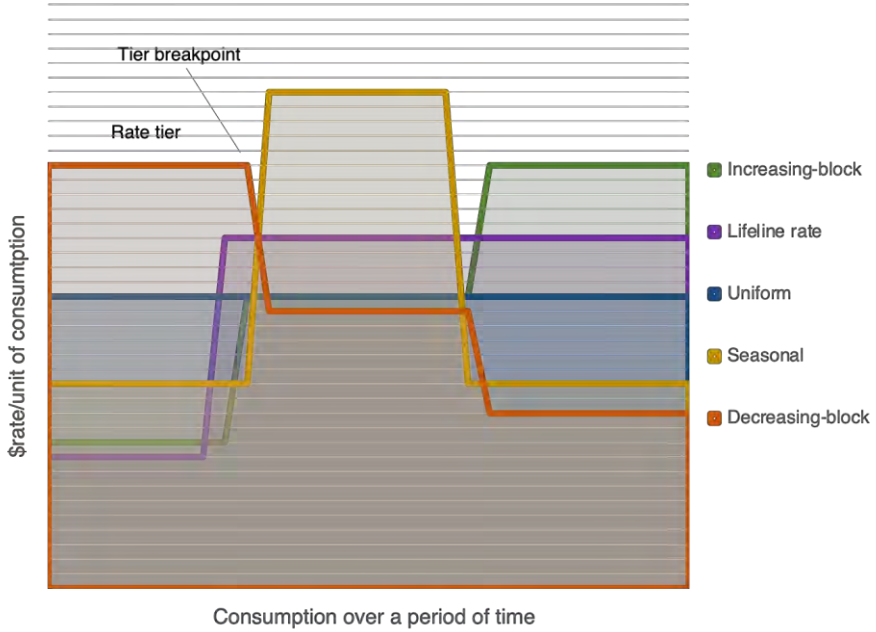
- Uniform by class may be embedded in declining block rate structures
- Easily communicated and understood and bills rise with usage (price signals)
- May mask temporal and spatial variations in system and customer costs of service (averaging)



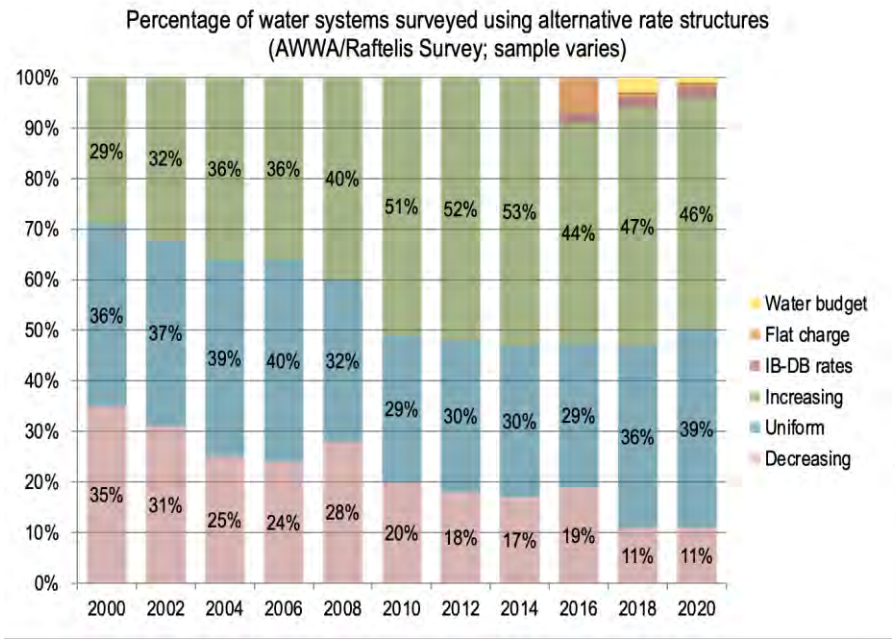
Note: peaking factors are an alternative means of customer classification.

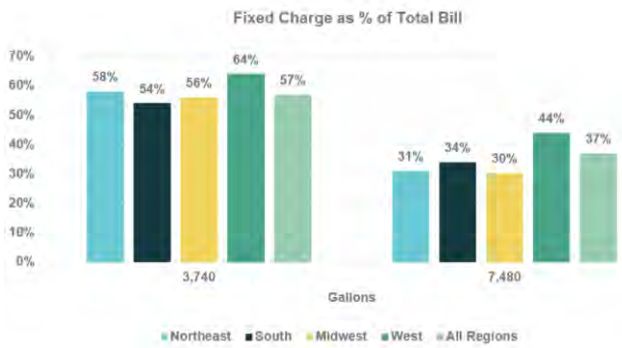
5.14 Block rates: decreasing and increasing

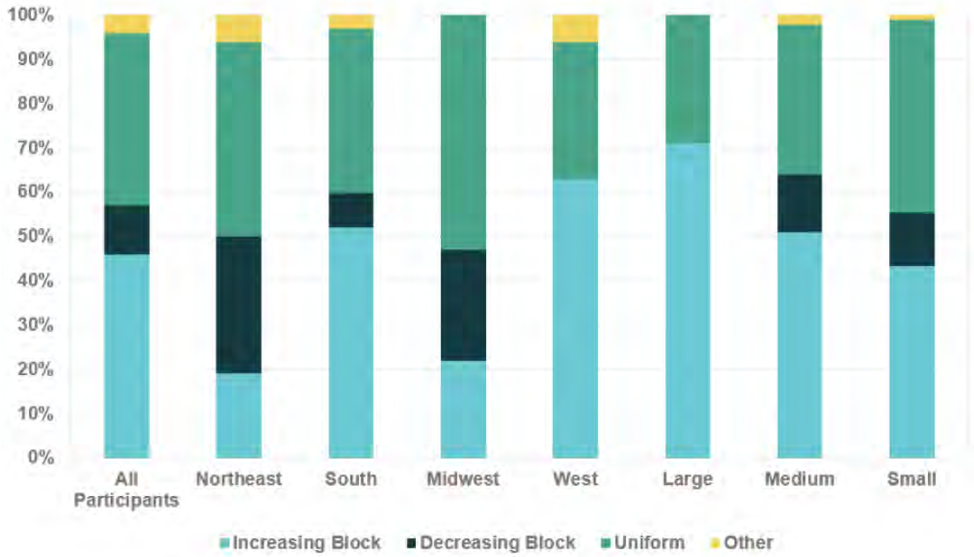
- Rate tiers (unit prices) for blocks of usage with breakpoints
  - Informed by engineering (cost) and economic (elasticity) analyses
- Block rates have different rationales
  - Like income taxes, total bills reflect cumulative calculations based on marginal rates
  - Decreasing-block are based on meter size & short-run marginal cost – less common
  - Environmental and consumer advocates tend to favor increasing-block rates for efficiency and affordability (respectively) – empirical findings on impacts are mixed
  - Fixed charges and household size also affect affordability



5.14 Rate design for water systems over time



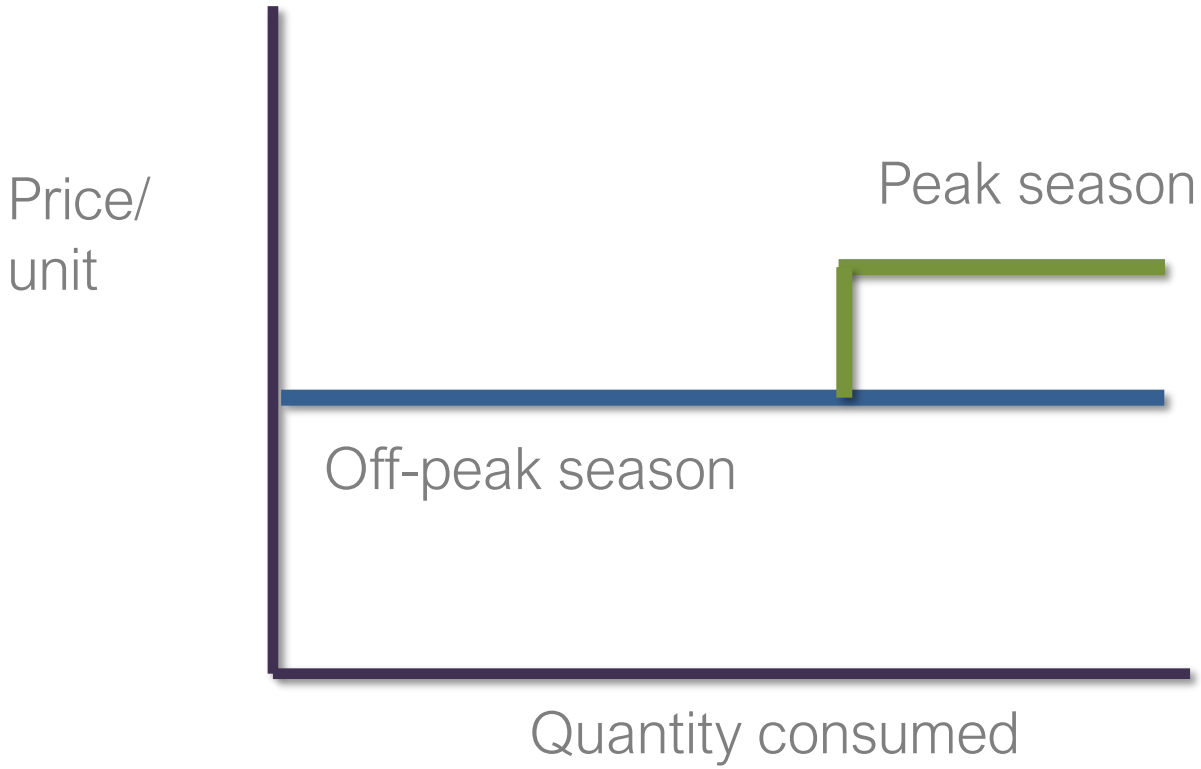




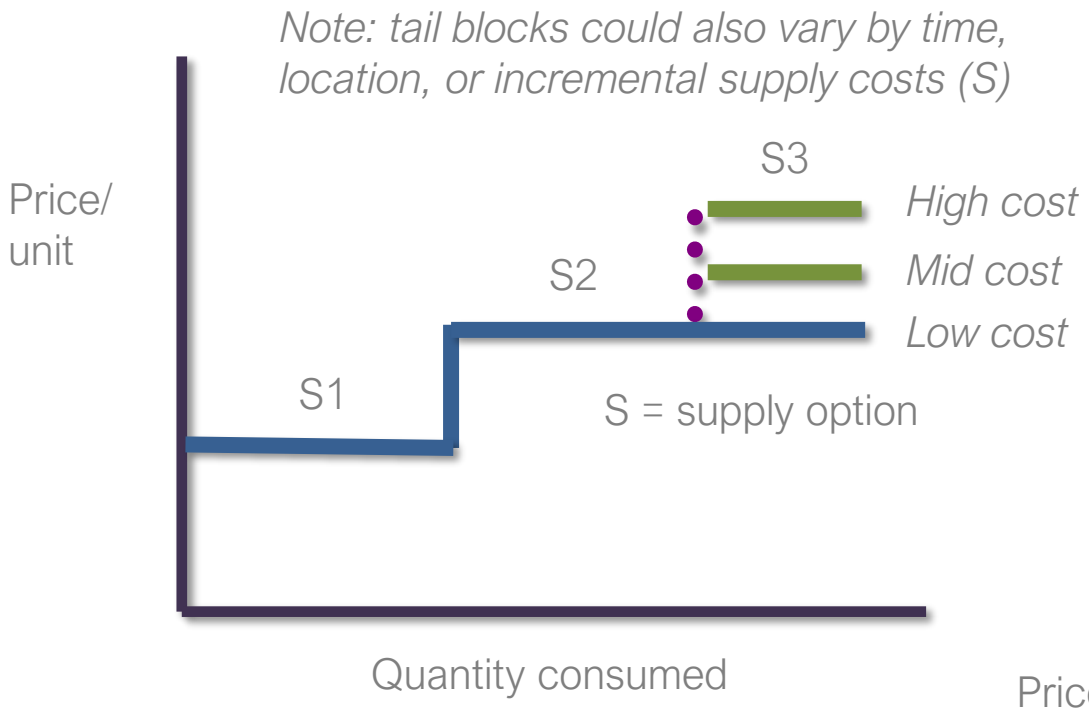
Q. How have rate structures changed with time – and why?

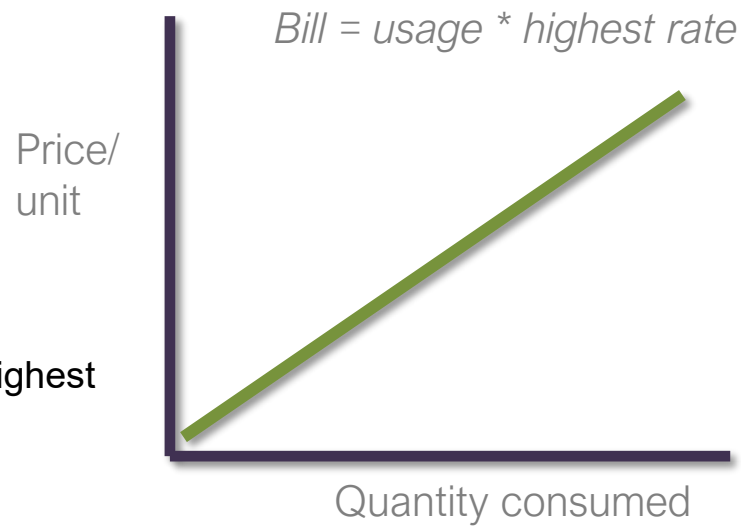
5.14 Seasonal and standby rates

- Seasonal block rates recognize the cost impact of seasonal energy and water usage on capacity requirements
  - May be applied to all usage in the season or to the seasonal increment (based on cost)
  - Seasonal-only homes and businesses may call for standby or ready-to-serve charges (using weighted peaking factors) to avoid subsidy by all-year customers



5.14 Incremental-cost and fully inclining rates (water)

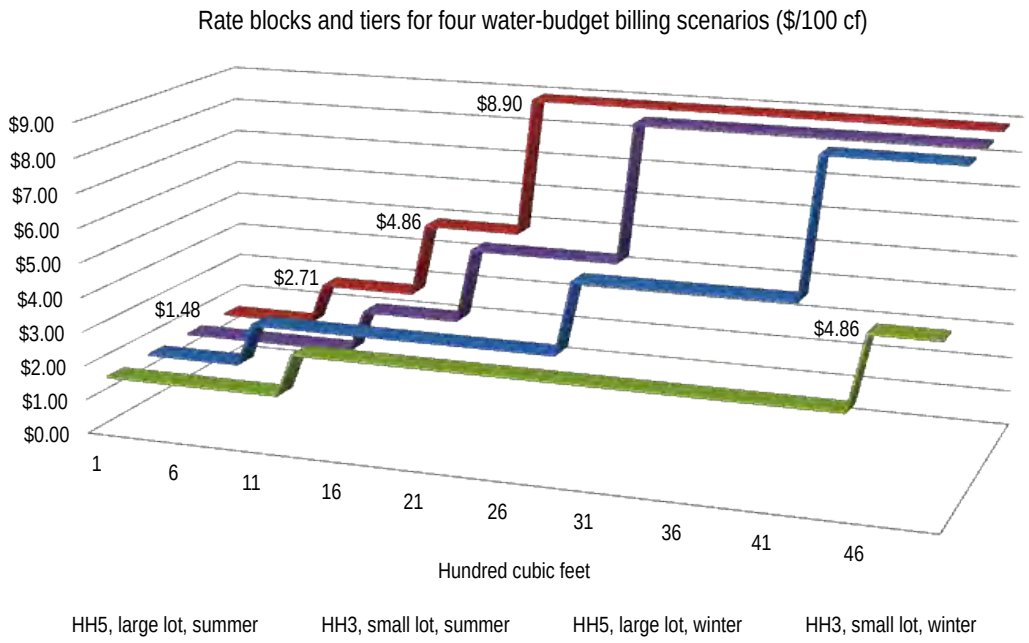




Fully inclining ("ratchet") rates price all usage at the highest recorded usage level (as compared to block rates)

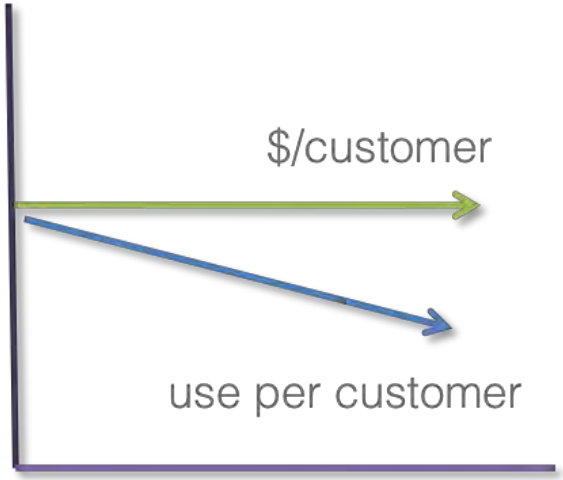
5.14 Allocation, excess-use, or usage-budget rates

- An allocation-based rate providing a water budget and rate tiers
  - Based on household size, lot size, weather conditions that define “need” and “waste”
  - Variances for swimming pools, large animals, etc.
- Raises issues of equity, fairness, and consistency with cost-of-service principles
- Advocates argue for effectiveness in realizing conservation and revenues



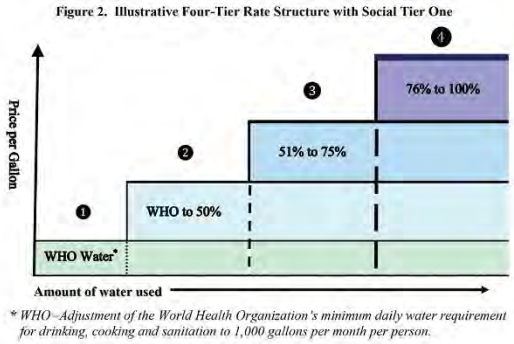
5.14 Rates under revenue decoupling

- Decoupling is a revenue-assurance mechanism (the ultimate mechanism?)
  - Compare to a cost-adjustment mechanism (e.g., DSIC)
  - Detaches sales from revenues and profit potential – caps revenues (vs. prices)
  - Similar to weather normalization or other revenue-related mechanisms
  - Straight fixed-var pricing is decoupling – but decoupling is more than "just rate design"
- Meant to address the presumed "split" or "throughput" incentives (to sell more)
  - Reactive policy to address nonstationary declining usage and sales due to efficiency in the context of persistent capital intensity – lowering revenue risk
  - Addresses revenue erosion or attrition by maintaining revenue neutrality per-customer
  - Does not provide a positive incentive for efficiency (return incentives persist)
- Rate formulas
  - Traditional: revenues = fixed price * sales
  - Decoupling: price = fixed revenue / sales
- Alternatives
  - Better demand forecasting
  - Frequent rate adjustments
  - Rate or revenue stabilization funds



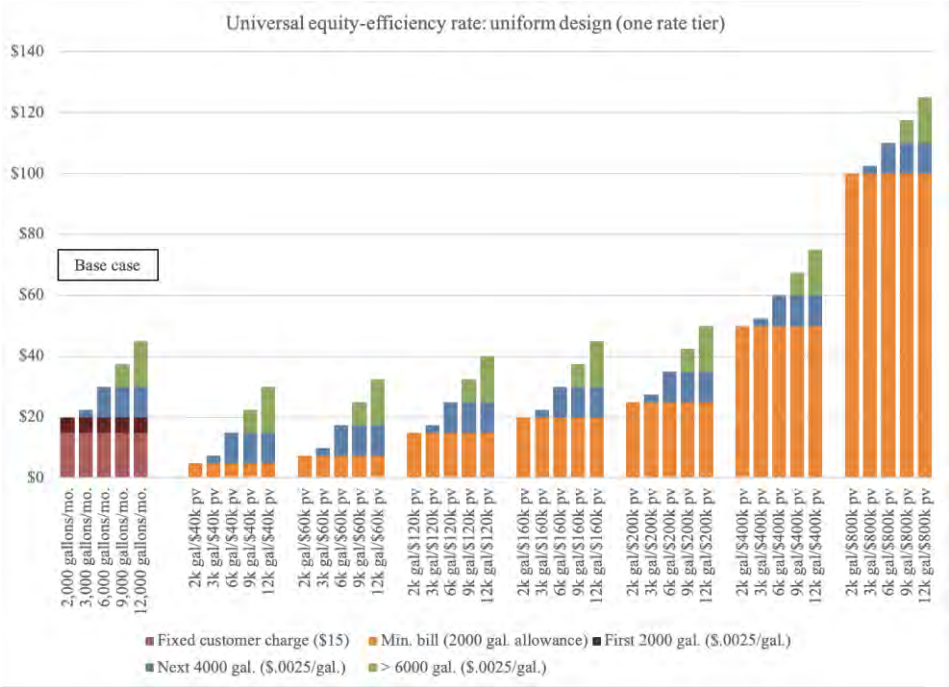
5.14 Pricing to promote affordable access

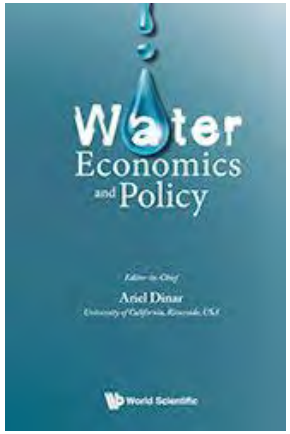
- Pricing and affordability – considering the ability to pay
  - Utility rates are regressive – they take a bigger share of the low-income budget
  - First usage block is highly price-inelastic: use standards, programs, assistance, lifelines
  - Additional blocks of usage are price-elastic – set prices to encourage efficiency
  - Require affordability metrics and may also consider household size
- Lifelines provide a low-price first block to eligible customers
  - Limited by policies, practices, politics related to price discrimination and subsidies
  - Programmatic discounts to qualified customers (low-income, disabled, seniors)
- Income-based rates - pioneered by Philadelphia, Baltimore, Detroit
  - May not comport with legal and practice frameworks (discrimination not based on cost)
  - Intentional & intuitive but administratively complicated, costly, not necessarily equitable



5.14. Universal equity-efficiency pricing model (Beecher, 2020)

- Recognize public functionality in cost allocation (scope economies)
- Calibrate a minimum bill to property assessment (capacity value)
- Provide an essential-use allowance for all households (public health)
- Design cost-based rates for variable water usage (resource management)
- Prohibit disconnection and deploy service limiters instead (water security)





5.14 Rate design variations and policy orientation

- Uniform (simplicity)
- Seasonal (load management)
- Marginal cost (efficiency)
- Lifeline (affordability)
- Prepaid (payment certainty)
- Spatially differentiated or zonal (efficiency)
- Spatially equalized or STP (regionalization)
- Locational (network congestion)
- Emergency or drought (resource scarcity)
- Negotiated (attraction and retention)
- Economic development (growth and jobs)
- System development charges (growth)
- Interruptible (load management)
- Curtailment (supply management)
- Standby or ready-to-serve (assurance)
- Peaking-factor (efficiency)
- Time-variant (load management)
- Real-time and dynamic (demand response)
- Critical-peak or event-day (load management)
- Quality differentiated (optimization)
- Value-of-service pricing (optimization)
- Excess-use or budget based (use control)
- Property-value based (affordability)
- Restricted or limited service (access)
- Net metering, feed-in tariffs, and value-of-solar (distributed solar generation)
- Virtual net metering (shared renewables)
- System development or impact fees
- Exit and abandonment fees (defection and stranded cost)
- Vehicle charging (electrification)

Q. How are public policies driving rate structure choices?

5.15 Bill calculation and impact

- Bill calculations
  - Important to understanding and communicating rate changes
  - Based on average and other usage levels
- Bill calculation formula
  - Fixed charge
  - + Rate tier 1 * block 1 usage
  - + Rate tier 2 * block 2 usage
  - + and so on…
- Bills may include other fees, surcharges, and taxes

Water Rates Calculator	
Select water company name from drop-down list.	
York Water Company (5/8")	
Fill in number of gallons per month:	*Gallons per Quarter (fills in automatically)*
4,654	13,962
Total Bill (Monthly)	**Total Bill (Quarterly)**
36.64	-

Allowed Rates
Effective: March 1, 2019

FIRE SERVICE
Rates

Public:	**Gravity Per Month**	**Repumped Per Month**
Public Fire Hydrant (Billed to a municipality or other customer)	$21.50	$30.76
Private:		
Sprinkler or Fire Service Systems:		
2-inch connection	$27.87	$40.15
3-inch connection	37.11	53.50
4-inch connection	46.38	66.92
6-inch connection	92.93	133.82
8-inch connection	185.87	267.77
10-inch connection	278.85	401.74
12-inch connection	414.74	599.29
Fire Hydrant, Private:		
Direct Connection to Company Owned Mains:		
First Hydrant	37.11	48.60
Direct Connection to Customer Owned Mains:		
First Hydrant	37.11	48.60
Each Additional Hydrant	27.87	36.48

GRAVITY AND REPUMPED SYSTEM
Meter Rates

Customer Charges	**Monthly Customer Charge**	
Meter Size (Inches)	**Gravity System**	**Repumped System**
5/8	$16.25	$16.25
3/4	22.30	22.30
1	31.50	31.50
1-1/2	48.50	48.50
2	63.00	63.00
3	151.80	151.80
4	225.90	225.90
6	250.90	250.90
8	481.40	481.40
10	619.50	619.50
12	762.70	762.70

Calculate your monthly bill:
1. Most residential customers are 5/8" meter, so start with the $16.25/mo customer charge.
2. Determine if you are "Gravity" or "Repump" customer (written on your bill). Then add $5.012 or $8.111 per 1,000 gallons per month. So a gravity customer using 4,000 gal/mo: $16.25+($5.012X4)=$36.30/mo

Output Charges

		Rate Per 1,000 Gallons					
Monthly Consumption (Gallons)		**Gravity System**			**Repumped System**		
		Residential	**Commercial**	**Industrial**	**Residential**	**Commercial**	**Industrial**
First	5,000	$5.012	$4.554	$4.554	$8.111	$7.401	$7.401
Next	45,000	5.012	3.261	3.261	8.111	6.288	6.288
Next	1,950,000	5.012	2.541	2.831	8.111	3.386	5.824
Over	2,000,000	5.012	2.541	2.437	8.111	3.386	3.574

5.15 Exercise: bill calculation

- Assumptions for an increasing-block rate structure
  - Fixed charge = $16.00
  - First block (< 3000) = $4.00 per 1,000 gallons
  - Second block (3,000 to 5,000 gallons) = $5.00 per 1,000 gallons
  - Third block (> 5,000) = $6.00 per 1,000 gallons

		2,000 gallons	6,000 gallons*
1	Fixed charge	$	$
2	Variable charge	$	$
3	Total	$	$
4	Percent fixed	%	%

5.15 Exercise: bill calculation

- Assumptions for an increasing-block rate structure
  - Fixed charge = $16.00
  - First block (< 3000) = $4.00 per 1,000 gallons
  - Second block (3,000 to 5,000 gallons) = $5.00 per 1,000 gallons
  - Third block (> 5,000) = $6.00 per 1,000 gallons

		2,000 gallons	6,000 gallons*
1	Fixed charge	$ 16	$ 16
2	Variable charge	$ 8	$ 28
3	Total	$ 24	$ 44
4	Percent fixed	67 %	36 %

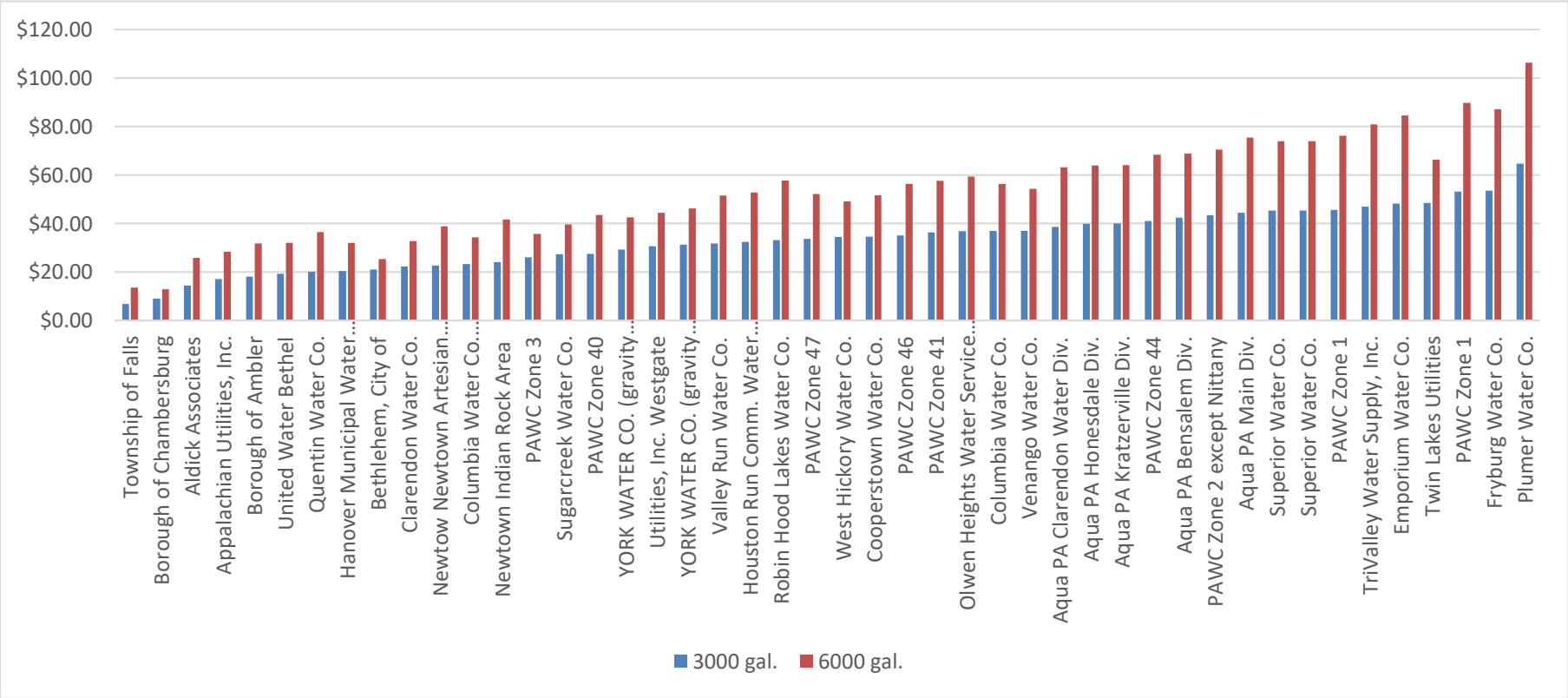
*6,000 gallons = $16 + (3*4) + (2*5) + (1*6) = $44

5.15 York: water tariff and bills

37-Water tariffs, rates, and bills

Line no.	Monthly Customer Charge	2014	2018 proposed	2019 settlement
1	5/8	$16.00	$18.50	$16.25
2	3/4	$22.00	$25.40	$22.30
3	1	$31.00	$35.80	$31.50
4	1.5	$47.80	$55.30	$48.50
5	2	$62.00	$71.70	$63.00
6	3	$149.50	$172.90	$151.80
7	4	$222.40	$257.20	$225.90
8	6	$247.00	$285.60	$250.90
9	8	$474.00	$548.10	$481.40
10	10	$610.00	$705.30	$619.50
11	12	$751.00	$868.30	$762.70
12				
13	GRAVITY rate per 1,000 gallons			
14	2014 Rate	Residential	Commercial	Industrial
15	First 5,000	$4.44	$4.11	$4.11
16	Next 45,000	$4.44	$2.94	$2.94
17	Next 1,950,000	$4.44	$2.29	$2.59
18	Over 2,000,000	$4.44	$2.29	$2.23
19				
20	2018 Proposed Rate	Residential	Commercial	Industrial
21	First 5,000	$5.09	$4.64	$4.64
22	Next 45,000	$5.09	$3.33	$3.33
23	Next 1,950,000	$5.09	$2.59	$2.95
24	Over 2,000,000	$5.09	$2.59	$2.53
25				
26	2019 Settlement Rate	Residential	Commercial	Industrial
27	First 5,000	$5.01	$4.55	$4.55
28	Next 45,000	$5.01	$3.26	$3.26
29	Next 1,950,000	$5.01	$2.54	$2.83
30	Over 2,000,000	$5.01	$2.54	$2.44

5.15 York: bill comparison (2018)



Q. How do rates and bills compare for different types of utilities?

5.15 York: bill comparison (2024)

Water Rates Calculator	
Select water company name from drop-down list.	
York Water Company (5/8") Gravity	
Fill in number of gallons per month:	*Gallons per Quarter (fills in automatically)*
3,675	11,025

Total Bill (Monthly)	Total Bill (Quarterly)
31.29	93.86

Water Rates Calculator	
Select water company name from drop-down list.	
Pittsburgh Water and Sewer (5/8")	
Fill in number of gallons per month:	*Gallons per Quarter (fills in automatically)*
3,675	11,025

Total Bill (Monthly)	Total Bill (Quarterly)
59.12	177.36

Water Rates Calculator	
Select water company name from drop-down list.	
Aqua Pennsylvania Rate Zones 1&2	
Fill in number of gallons per month:	*Gallons per Quarter (fills in automatically)*
3,675	11,025

Total Bill (Monthly)	Total Bill (Quarterly)
60.42	181.25

Water Rates Calculator	
Select water company name from drop-down list.	
PAWC Zone 1 (5/8")	
Fill in number of gallons per month:	*Gallons per Quarter (fills in automatically)*
3,675	11,025

Total Bill (Monthly)	Total Bill (Quarterly)
64.74	194.23

5.16 Water customer rights and responsibilities (PA PUC)

- As a residential water or sewer customer… your rights and responsibilities include your right to:
  - Safe and reliable water or sewer service.
  - A clear and concise bill.
  - Fair credit and deposit policies.
- You also have the right to:
  - Know how your water or sewer bill
  - is calculated.
  - Check your water or sewer bill for accuracy.
  - Question or disagree with the water or sewer company.
  - Receive continuous water or sewer service if you meet your responsibilities.
- You have the responsibility to:
  - Pay your bill on time.
  - Provide the water or sewer company access to its meter.
  - Give the water or sewer company at least 7 days advance notice before you move or wish to have service discontinued.
- You have additional protections outlined in this guide if you:
  - Are a victim of domestic violence with a Protection From Abuse Order.
  - Live in a low-income household.
  - Are seriously ill or a member of the household is seriously ill.
- Your water or sewer company has the responsibility to honor all of these rights.

5.16 York: service application

The York Water Company
Application for Service

Effective Date	Last 4 digits of your Social Security Number	Account Number

I/We _____ request water service to the property at _____

I / We agree to pay and to use the water service according the the Rates, Rules and Regulations or Tariff of the Company, as filed with the Pennsylvania Public Utility Commission, which are now in effect or will become effective in the future. The York Water Company will approve this application when you pay, or make arrangements to pay, any unpaid charges for services within the past four years.

Home _____ Cell _____

Work _____ Email Address _____ (Used for internal purposes only)

_____ Single Unit _____ Multi Unit

Class of Customer

_____ Residential
_____ Commercial
_____ Industrial
_____ Public
_____ Public Fire
_____ Private Fire

Water is Used to **Heat** Your Home
This does not include the water heater
____ Yes
____ No

_____ Pump Installation
_____ Residential Fire Sprinkler

Signature X _____

Print Name X _____

Mailing Address
If Different from Service Address
_____ *Number and Street*
_____ *City, State and Zip*

***Paperless Billing (Requires Email)**
_____ **Yes**
_____ **No**

Issued 3rd Party Card
_____ **Yes**
_____ **No**

Former Address
If Prior York Water Customer
_____ *Number and Street*
_____ *City, State and Zip*

Ratepayer is: Please Check One Below ☑

_____ **RENTER**
Landlord's Name and Address _____

Are you paying for another apartment/unit's water use?
_____ Yes _____ No _____ If Yes, Number of Units

_____ **LANDLORD** Tenants Name Address

_____ *Continued Service

_____ Number of Units

_____ **OWNER** Ratepayer and members of household are only occupants AND are not paying or receiving rent.

Notes: _____

YORK WATER COMPANY OFFICE USE ONLY

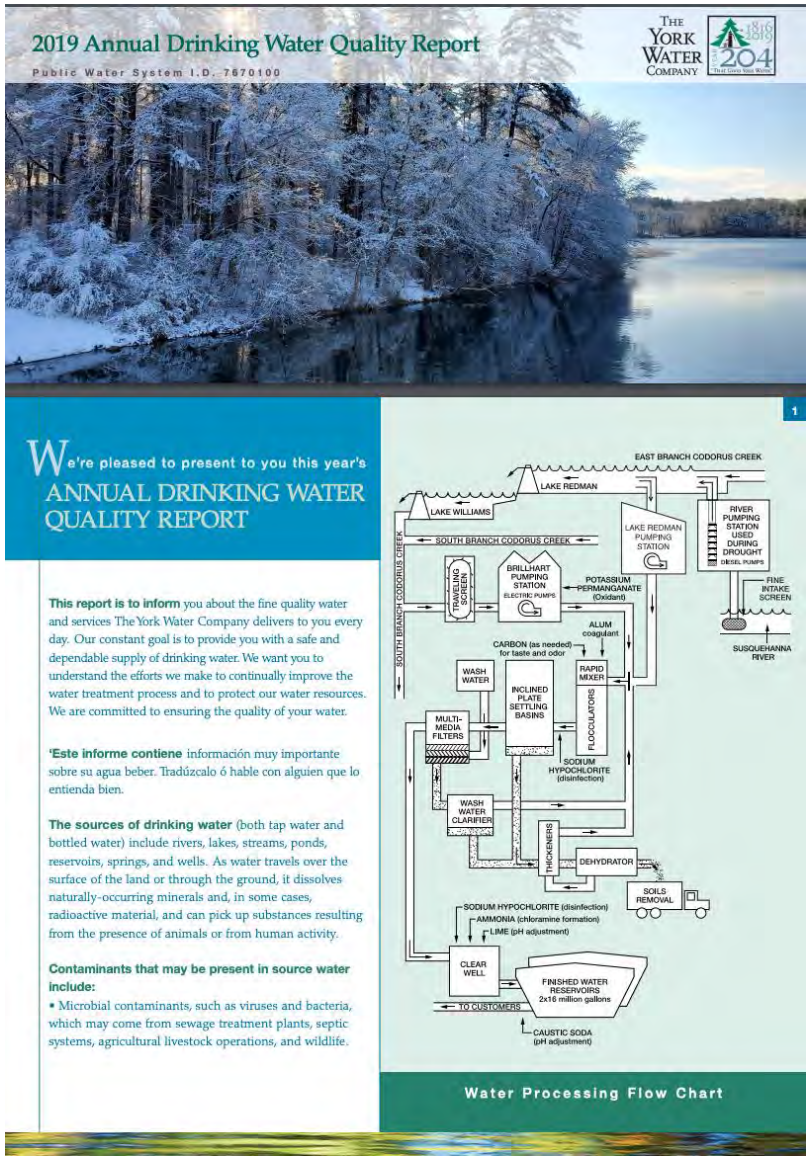
Type Of Service
_____ **Residential**
_____ **Price List**
_____ **Gravity**
_____ **Repump**

_____ **Billing Method**
_____ **Billing Cycle**
_____ **Type of Service**
_____ **Tax Code**

_____ **Township or Boro**
_____ **Meter Number**

Intials: _____

5.16 York: water quality (consumer confidence) report



2019 Annual Drinking Water Quality Report

Public Water System I.D. 7670100

THE YORK WATER COMPANY

We're pleased to present to you this year's ANNUAL DRINKING WATER QUALITY REPORT

This report is to inform you about the fine quality water and services The York Water Company delivers to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and to protect our water resources. We are committed to ensuring the quality of your water.

¡Este informe contiene información muy importante sobre su agua beber. Tradúzcalo ó hable con alguien que lo entienda bien.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

• Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

1

Water Processing Flow Chart

2019 Test Results

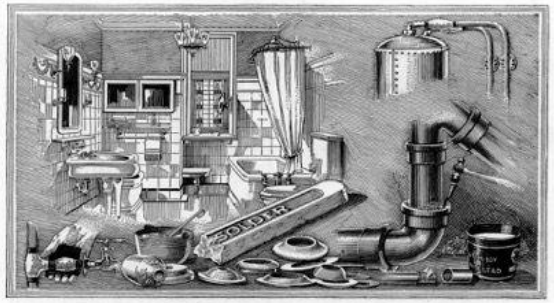
Microbiological Contaminants

Microbial (related to E. coli)

Contaminant	Treatment Technique	Maximum Contaminant Level Goal (MCLG)	Assessments/ Corrective Actions	Compliance Achieved Yes/No	Source
E. coli	Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirement	N/A	0 – None Needed	Yes	Human and animal fecal waste

Detected Parameter	Units	Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Results	Compliance Achieved Yes/No	Source
Total Coliform Bacteria	% Positive Sample	Presence of Coliform Bacteria in less than 5% of monthly samples	0	0	Yes	Naturally present in environment
Fecal Coliform and E. coli	Number of Samples	A routine sample and repeat sample are total coliform positive, and one is also fecal coliform or E. coli positive	0	0	Yes	Human and animal fecal waste

5.16 The lead legacy



Lead helps to guard your health

YOU wouldn't live today in a house without an adequate plumbing system. For without modern plumbing, sickness might endanger your life.

Lead concealed in the walls and under the floors of many modern buildings helps to give the best sanitation.

Lead pipe centuries old

Lead, therefore, is contributing to the health, comfort, and convenience of people today as it did when Rome was a center of civilization. Lead water and drainage pipes more than 1800 years old have been found in exactly the condition they were in when laid.

In some cities today the law specifies that lead pipe alone may be used to bring water from street mains into the building.

In drainage systems are lead traps made of lead pipe bent into the shape of the letter S, so that a little water will stay in the bend and prevent gases which collect in the pipe from getting out through the house.

The malleability of lead also makes it easy to change the direction of any pipe through the use of lead bends.

Joining the pipes

A plumber easily "wipes" a joint or repairs a pipe leak with lead and tin solder. Because this alloy melts at the low temperature of 358 degrees it can be applied without melting the lead pipe, which melts at 620 degrees.

Lead is also poured into the flanges of pipe-joints to make them absolutely tight. Pipe threads are painted with white-lead or red-lead to make a tight connection. Where vibration or movement of pipes may loosen a poured joint, lead wool is used; lead shredded into threads is packed into the joint in a dense, compact mass.

Rubber gaskets and ball washers containing lead prevent leaking at joints and faucets.

Lead is used to beautify the modern bathroom. Red-lead and litharge, both lead oxides, are important ingredients in making the glossy white enamel covering the iron bodies of tub and basin and the glazed tile walls.

Lead in paint

While lead is invaluable in assuring comfort and proper sanitation, its best-known and most widespread use is as white-lead in paint. Such materials as wood would soon deteriorate unless protected with paint. And the paints that give the most thorough protection against the weather are based on white-lead.

The loss of invested capital through failure to protect the surface of property adequately has led property owners to paint frequently and well. As days and months go by, more and more of them are learning the wisdom of the phrase, "Save the surface and you save all." And they are using white-lead paint to prolong the lives of their houses.

Look for the Dutch Boy

NATIONAL LEAD COMPANY makes white-lead and sells it mixed with pure linseed oil, under the name and trade-mark of *Dutch Boy white-lead*. The figure of the Dutch Boy is reproduced on every keg and is a guarantee of exceptional purity.

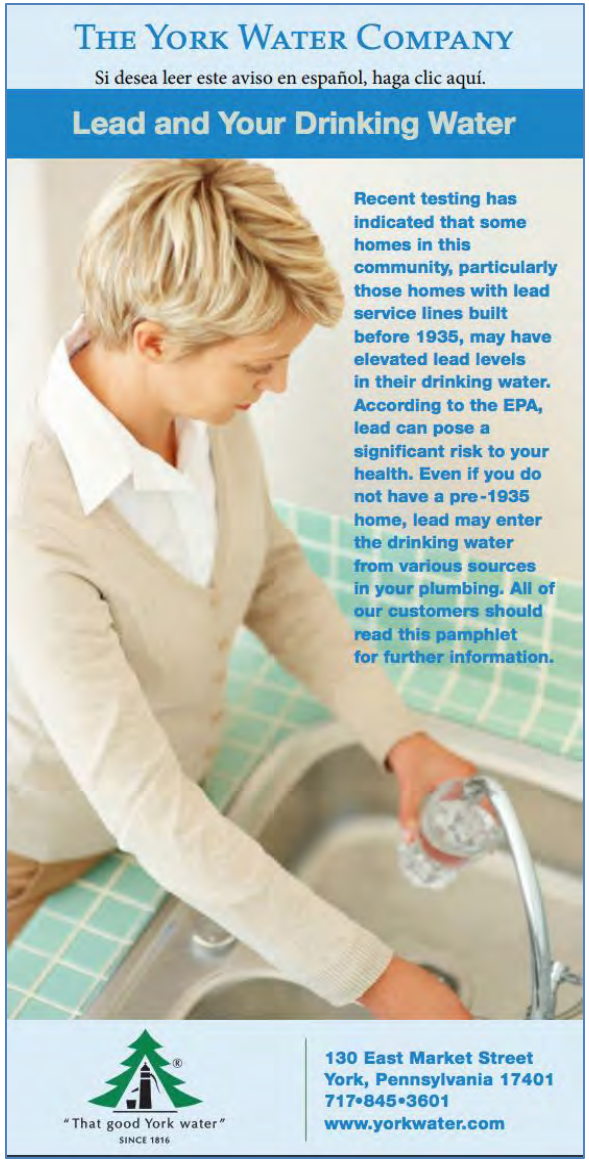
Dutch Boy products also include red-lead, linseed oil, flatting oil, babbitt metals and solder.

More about lead

If you use lead, or think you might use it in any form, write to us for specific information.

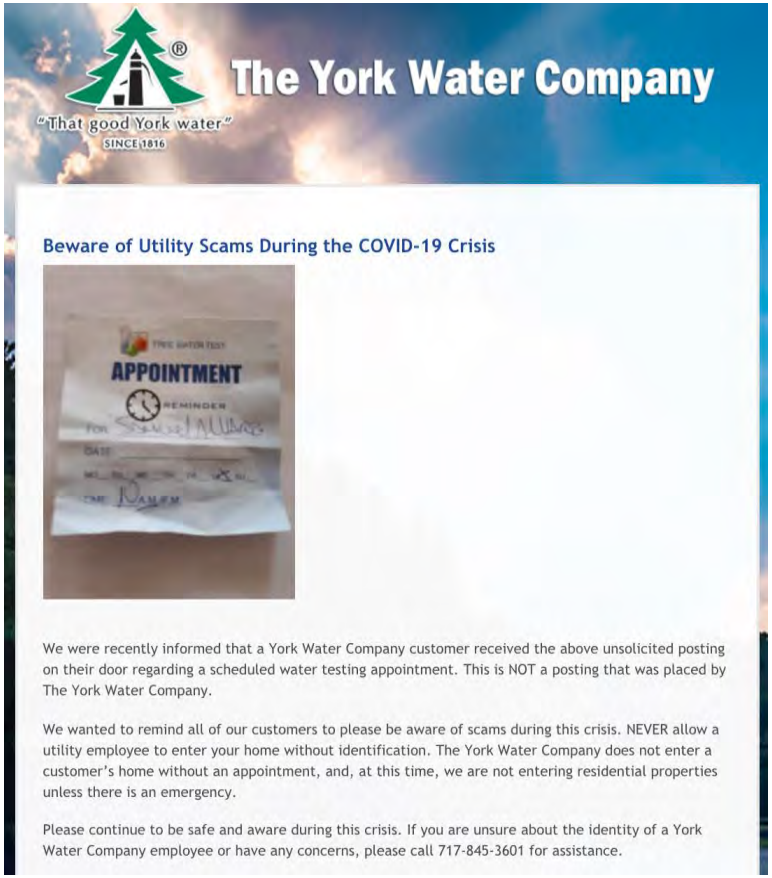
NATIONAL LEAD COMPANY

New York, 111 Broadway; Boston, 131 State St.; Buffalo, 116 Oak St.; Chicago, 900 West 18th St.; Cincinnati, 659 Freeman Ave.; Cleveland, 820 West Superior Ave.; St. Louis, 722 Chestnut St.; San Francisco, 485 California St.; Pittsburgh, National Lead & Oil Co. of Pa., 316 Fourth Ave.; Philadelphia, John T. Lewis & Bros. Co., 417 Chestnut St.



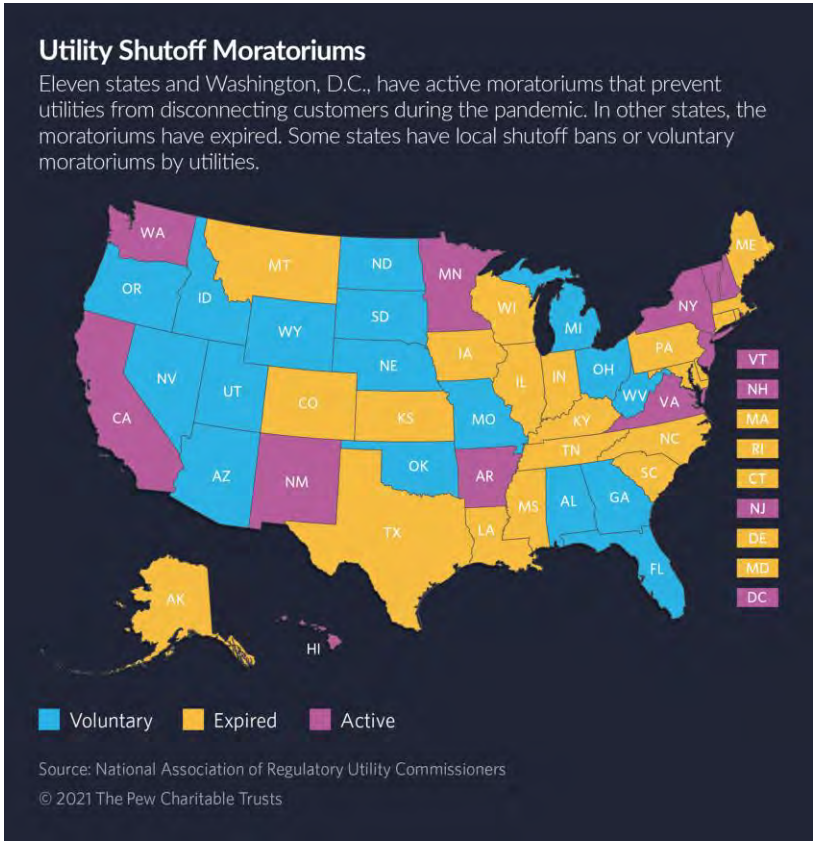
5.16 Consumer protection

- Consumer protection role
  - Focuses on assisting individual customers in disputes with utilities (complaints) - often utilize ADR methods
  - Consumer advocates represent the consumer class(es) in cases
- Pennsylvania PUC Division of Customer Assistance and Complaint
  - Responsible for answering questions and handling complaints about electric, electric restructuring, utility competition, natural gas, telephone, steam heat, water and wastewater companies. Investigators arbitrate billing, credit and miscellaneous problems and issue binding decisions for resolving informal complaints... This division also helps to ensure that consumers subject to termination have the opportunity for Commission review. Consumers can also call if they have questions about the restructuring of the electric industry and utility competition."



5.16 Consumer protection against disconnection

- Moratoriums on disconnection (COVID)
- Payment assistance and plans
- Arrearage forgiveness



PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA 17105-3265

Re: Public Utility Service Termination Moratorium
Proclamation of Disaster Emergency – COVID-19

EMERGENCY ORDER
DOCKET No: M-2020-3019244

On March 6, 2020, pursuant to subsection 7301(c) of the Emergency Management Services Code, 35 Pa. C.S. §§ 7101, *et seq.*, Governor Tom Wolf issued a Proclamation of Disaster Emergency proclaiming the existence of a disaster emergency throughout the Commonwealth for a period of up to ninety (90) days, unless renewed by the Governor. Shortly thereafter, on March 11, 2020, the World Health Organization declared COVID-19 – the coronavirus – a pandemic.

The Proclamation of Disaster Emergency authorizes and directs the suspension of "the provisions of any regulatory statute prescribing the procedures for conduct of Commonwealth business, or the orders, rules or regulations of any Commonwealth agency, if strict compliance with the provisions . . . would in any way prevent, hinder, or delay necessary action in coping with this emergency."

In addition, Section 1501 of the Public Utility Code, 66 Pa. C.S. § 1501, provides that every public utility has a duty to furnish and maintain adequate, efficient, safe, and reasonable service as is necessary for the accommodation, convenience, and safety of its patrons, employees, and the public. Section 1501 explicitly requires such service to be "reasonably continuous and without unreasonable interruptions." 66 Pa. C.S. § 1501.

THE YORK WATER COMPANY RESPONSE TO COVID-19:
Green Phase Update

Dear York Water Company Customer:

For the past 204 years, York Water has been there to take care of our community. From the Civil War to the Spanish Flu pandemic, through two World Wars and the events of 9/11, York Water Company has persevered, and we continue this tradition of dedication to our community during this health crisis. We wanted to inform you of measures we are taking to assist our customers and employees during the COVID-19 crisis.

We are prepared
York Water has activated our business continuity plan to strengthen our ability to provide safe, reliable, high-quality service to our customers, continue to deliver water and wastewater services that meet all federal and state drinking water and wastewater standards, and protect our employees and customers during this public health crisis.

Your water will not be shut off
We have suspended billing-related service shutoffs in order to ensure the proper hygiene and health of our customers. You, as a York Water customer, are still responsible for any outstanding balance that you currently have, as well as any new charges. We recommend that you pay as much as you can when you are able, but rest assured that we will not apply late charges or turn off your water service during this public health crisis. Your water service may potentially be interrupted for a brief period of time for emergency work if that work becomes necessary.

We have turned water service back on for customers who were previously shutoff for non-payment. This includes customers whose water service was turned off for non-payment of sewer service, even if The York Water Company is not the sewer service provider. If you are still currently without water service, please contact us immediately at 717-845-3601 to schedule a turn-on.

Social Distancing and Safe Practices
As of Tuesday, May 26, 2020, our front office in Downtown York is open to the public once again. Customers MUST enter the building through the East Market Street entrance. Customers wishing to pay their bill or speak to a Customer Service Representative in person can now do so, but safe social distancing and face covering will be enforced. Plexiglass shields have also been installed at each of the workstations. We have modified our customer traffic pattern to ensure appropriate social distancing. The health and safety of our customers and our employees is paramount.

As always, our Customer Service team is available via phone at 717-845-3601 or email at customer.service@yorkwater.com to answer any questions. Our website, www.yorkwater.com, is available to pay your bill, apply for water service, and request to end water service. We encourage our customers to continue to utilize these resources.

Green Phase Update
As of Monday, June 15, 2020, we will start entering customer's homes again to complete routine meter repairs and exchanges. We will be calling customers to schedule appointments with those that are comfortable having us enter their homes.

We will not enter a customer's home until they have filled out a checklist that will be provided by the York Water Company employee the day of your appointment. When a York Water Company employee arrives at your home, they will provide you with this checklist and ask that you fill it out and answer correctly prior to them entering your home.

Your drinking water is safe
The York Water Company's water treatment processes are effective in removing harmful pathogens, including those of the coronavirus family. Our water meets all federal and state drinking water standards and is safe to drink. For additional information about the coronavirus and drinking water and wastewater, please visit:
https://www.epa.gov/coronavirus/coronavirus-and-drinking-water-and-wastewater#main-content

5.17 Addressing affordability at the utility scale

- Affordability of essential utility services is a growing concern
  - Cost control, classification, and allocation play a role
  - Median income metrics may be insufficient
- Common features of utility-based policies, programs, and prices
  - Presumes that public tax support is unavailable or insufficient
  - Eligibility may be based on means-testing for other forms of assistance
  - Income-eligible but also customers with medical conditions and seniors
  - Must overcome political, legal, and financial barriers and subsidy issues
- Policies
  - Budget billing, bill timing, flexible terms, and payment options
  - Rules for disconnection (shut-off) and reconnection
  - Submetering to establish need, prepaid meters with credit, and user information
- Programs
  - Customer assistance programs (CAPs) – temporary or permanent
  - Programs to fix leaks and upgrade plumbing and fixtures to improve end-use efficiency
  - May be coordinated with not-for-profit organizations and funded voluntarily
- Prices
  - Payment discounts, fee waivers, and arrearage forgiveness
  - Tiered rates, including lifeline rates with a below-cost first usage block
  - Income-based rates and rates that account for household size

5.17 Methods to mitigate rising costs, rates, and bills

- Structural solutions to gain efficiency from scale (as realistic)
- Supply-side cost control and efficiency (asset and input management)
- Strategic planning and optimized operations
- Competitive bidding for procurement of goods and services
- Demand-side efficiency programs
- Tax support for infrastructure (loans and grants)
- Refinancing and extended-term debt
- Limit inequitable subsidies through rates (overall and inter-customer)
- Alternative revenue streams (publicly owned)
- Ratepayer engagement, information, and assistance
- Alternative methods of cost allocation and rate design

5.17 York: low-income customer assistance program

- ISSUE ¶39. Funding for low-income customer assistance program
  - Proposed $20,000 budget for The York Water Cares Low Income Customer Assistance Program is approved on a pilot basis until York's next base rate case on the condition that:
  - (i) all of the program's annual expenditures funded by ratepayers will be for direct payment of customer assistance to York customers and will not include any payments for administrative, overhead, or other indirect costs or contributions related to administration of the program;
  - (ii) York will work with I&E and OCA to develop the details of the program...
  - (iii) at the end of each fiscal year, all unspent annual program funds will be rolled over to the program for spending in the next fiscal year; and (iv) at the end of the pilot and until base rates are reset in York's next base rate case, any unspent program funds will be refunded to ratepayers with interest.
  - York will evaluate the pilot and... make a recommendation to the PUC regarding the operation of the program and appropriate level of funding supported by a needs assessment. Joint Petitioners agree that this $20,000 pilot budget is a settlement amount and has not been set pursuant to any need-based determination.

5.18 Implementing rate changes

- Focus more attention on total bill burden as compared to rates
- Avoid excessive complexity and unnecessary confusion (gal. vs. ccf)
- Recognize trade-offs and impacts explicitly (sensitivity analysis)
- Evaluate demand elasticity and distributional effects
- Provide opportunities for stakeholder input
- Explore a full range of rate-design options
- Communicate policy goals to ratepayers clearly
- Prepare a qualified customer-service workforce
- Phase-in substantial changes to avoid rate shock (gradualism)
- Clarify price signals with information social and other media
- Approach empirically and experimentally by collecting and analyzing data
- Monitor and evaluate for intended and unintended consequences
- Modify based on response, outcomes, and evolving goals and conditions

Q. What rate implementation challenges are utilities facing today?

5.18 Complex water pricing

January - June 2022 Biannual Notice of Change in

LADWP WATER RATES

This notice is to inform you of the expected biannual water rate adjustments authorized by the Water Rate Ordinance for the City of Los Angeles that reflect the cost of buying water from the Metropolitan Water District (MWD) and executing other water projects and programs. These factors will become effective January 1, 2022. Individual rate adjustments will be an increase or decrease, as shown below. More information about LADWP's water rates can be found on the Department website at www.ladwp.com/waterrates.

The factors below are per Hundred Cubic Feet (HCF) of water used. One HCF equals 748 gallons.

Enero - Junio 2022 Aviso bianual de cambio a las

TARIFAS DE AGUA DE LADWP

Este aviso es para informarle del ajuste bianual a las tarifas de agua autorizados por la Ordenanza de la Tarifa de Agua de la Ciudad de Los Angeles que reflejan el costo de comprar agua del Metropolitan Water District (MWD) y para otros proyectos y programas de agua. Estos factores tomarán vigencia a partir del 1ro de enero, 2022. Ajustes de tarifa individuales aumentarán o disminuirán en la muestra a continuación. Más información sobre las tarifas de agua de LADWP está disponible en el sitio Web del departamento: www.ladwp.com/waterrates.

Las tarifas debajo son por unidades de cien pies cúbicos (HCF, por sus siglas en inglés) de agua usada. Un HCF es igual a 748 galones.

Water Rate Adjustment Factors	Factores de Ajustes de Tarifas de Agua	Jul - Dec 2021 jul - dic 2021	Increase (Decrease) from Previous Period Aumento (disminución) del Periodo Anterior	Jan - June 2022 ene - jun 2022
Water Supply Cost Adjustment Factor Tier 1	Ajuste al Costo de Suministro de Agua Nivel 1	$ 2.331	$ 0.154	$ 2.485
Water Supply Cost Adjustment Factor Tier 2	Ajuste al Costo de Suministro de Agua Nivel 2	$ 3.052	$ 0.383	$ 3.435
Water Supply Cost Adjustment Factor Tier 3	Ajuste al Costo de Suministro de Agua Nivel 3	$ 3.090	$ 1.567	$ 4.657
Water Supply Cost Adjustment Factor Tier 4	Ajuste al Costo de Suministro de Agua Nivel 4	$ 3.090	$ 3.925	$ 7.015
Water Quality Improvement	Mejoras de Calidad de Agua	$ 1.783	$ 0.075	$ 1.858
Owens Valley Regulatory	Regulador de Owens Valley	$ 0.275	($ 0.011)	$ 0.264
Water Infrastructure	Infraestructura de Agua	$ 0.506	$ 0.000	$ 0.506
Base Rate Revenue Target Adjustment Factor	Ajuste de Objetivo Básico de Ingresos			
Schedule A	Calendario A	$ 0.566	($ 0.329)	$ 0.237
Schedule B	Calendario B	$ 0.128	($ 0.048)	$ 0.080
Schedule Other	Calendario Otro	($ 0.126)	$ 0.010	($ 0.116)
Low-Income Subsidy	Subsidio para Clientes de Bajos Recursos	$ 0.089	($ 0.002)	$ 0.087
Water Expense Stabilization	Estabilización del Costo de Agua	$ 0.042	($ 0.056)	($ 0.014)

For the year beginning January 1, 2022 and ending December 31, 2022, Outside City Surcharge will be $0.744, increased from the January 2021 – December 2021 surcharge of $0.665

Para el año empezando el 1 de enero de 2022 y terminando el 31 de diciembre, el Recargo Fuera de la Ciudad será $0.744, aumentado apartir de enero 2021 a diciembre 2021, anteriormente era $0.665.

Q. Should communities have discretion in ratemaking?

5.18 Totality of a rate case

- Regulatory policies and rate-case decisions
  - Impose, mitigate, and allocate risks and rewards – each relates to incentives
  - No issue should be considered in isolation (single-issue ratemaking)
  - Be aware of interest-based "best practices"
- Regulators should consider the totality of regulatory treatment
  - Test year (historical or future)
  - Treatment of construction costs (pre-approval, CWIP)
  - Cost-adjustment mechanisms (opex and capex)
  - Revenue-assurance mechanisms (decoupling)
  - Recovery of operating expenses
  - Depreciation practices and methods
  - Demand (load) projections
  - Demand-suppression adjustments
  - Cost allocation and rate design methods
  - Authorized rates of return
  - Timing of cases and decisions

Q. How do various ratemaking policies affect return opportunities?

5.19 York: conditions of settlement

- There are several relevant conditions of settlement that the Joint Petitioners have also agreed upon.
- The settlement is conditioned upon the PUC's approval of the terms and conditions contained therein without modification.
- If the PUC modifies the settlement, any Joint Petitioner may elect to withdraw from the settlement and may proceed with litigation.
- In such an event, the Joint Petitioners have agreed that the settlement shall be void and of no effect.
- If the PUC does not approve the settlement and the proceedings continue to further hearings, the Joint Petitioners reserve their respective rights to present additional testimony and to conduct full cross-examination, briefing and argument.
- The settlement may not be cited as precedent in any future proceeding, except to the extent required to effectuate its implementation.
- The settlement is presented without prejudice to any position that any of the Joint Petitioners may have advanced, and without prejudice to the position any of the Joint Petitioners may advance in the future, on the merits of the issues in future proceedings except to the extent necessary to effectuate the terms and conditions of the settlement.
- If the ALJ adopts the settlement without modification, the Joint Petitioners have agreed to waive their right to file exceptions.

5.19 York: changes to tariffs and stay-out provision

- ISSUE ¶44. Stay-out period for the next base rate case
  - York agrees that it will not file another base rate case before 5/1/20; provided, however, that the foregoing provision shall not prevent York from filing a tariff or supplement to increase in rates in compliance with PUC orders or in response to fundamental changes in regulatory or federal tax policies affecting York's rates.

Supplement No.
To
Water-Pa. P.U.C. No. 14
One Hundred Twentieth Revised Page No. 2

The York Water Company
York, Pennsylvania

Canceling
One Hundred Nineteenth Revised Page No. 2

LIST OF CHANGES MADE BY THIS SUPPLEMENT

INCREASES

Base rates for water service are increased by approximately 7.2% overall. Average residential customer base rates are increased by approximately 7.3%, average commercial customer base rates are increased by approximately 7.3%, average industrial customer base rates are increased by approximately 9.7%, public fire service rates in the gravity service area are increased by approximately 1.4%, and private fire service rates are increased by approximately 5.7%.

DECREASES

The Distribution System Improvement Charge is decreased to 0.00% from 4.82% on page 66.

CHANGES

A Federal Tax Adjustment Credit (FTAC) is established at a rate of (4.29%) on page 69.

5.19 York's rate filing in 2022: statement of reasons

- Recovery of $176 million in capital expenditures. We have greatly increased the total plant investment from the level claimed in our last rate request in 2018. This increase of approximately $176 million (through February 2024) in system improvements since the last rate request includes the following major items:

  1. Replaced 45 miles of pipe. Replacement, reinforcement, and relining of aging water mains, replacement of service lines, meters, and hydrants. Nearly 45 miles of aging pipeline, about 4.5% of our total, was replaced which extends the life of our infrastructure, reduces costs associated with main breaks and leaks, and provides improved customer service and reliability.
  2. Improvements to Lake Williams dam. Construction project required by the Pennsylvania Department of Environmental Protection to replace the spillway and armor the dam. This will ensure that the dam continues to be safe and effective for many years into the future.
  3. Lead service lines replacement. Replacement of all company-owned lead service lines within a compressed two-year time frame. In addition, replacement of customer-owned lead service lines when discovered.
  4. Pumping equipment. Upgrade of pumping equipment at our primary pump station to increase efficiency that reduces costs and provide redundancy and reliability.
  5. Construction of a wastewater treatment plant. Construction required to service the wastewater needs of a community in a safe and efficient manner that meets or exceeds all regulatory requirements.
  6. Enhanced security. System monitoring and computer system upgrades.
  7. Distribution system improvements. Improvements to standpipes and pumping equipment to ensure customers have a safe and reliable supply of water that meets current and proposed regulations.
  8. Upgrades to water and wastewater treatment equipment and facilities. These projects are necessary to maintain compliance with existing and proposed regulations and provide resiliency in operations.

5.20 Ratemaking scenarios

1. A utility is required by law to replace all lead service lines in its area and would like to spread the cost across all water customer classes.
2. A utility wants to implement a customer-assistance program pilot program to establish system benefits in terms of lowering the cost of disconnection.
3. A utility calculates its usage for ratemaking purposes based on a ten-year moving average.
4. A utility witness testifies in a rate case that fixed and variable charges should be aligned with fixed and variable costs based on economic pricing principles.
5. A utility seeks to subdivide the residential class into single-family and multi-family customers based on differential peaking factors.
6. A utility seeks approval for an economic development rate to retain one high-volume customer. The utility has some excess capacity.