Seasonal Water Rate Structures

Ames City Council Meeting
March 4, 2008

Purpose

- Use our water rate structure to encourage conservation during our peak consumption season
- Shift the cost for the construction of additional treatment capacity to those uses of water that are driving the cost

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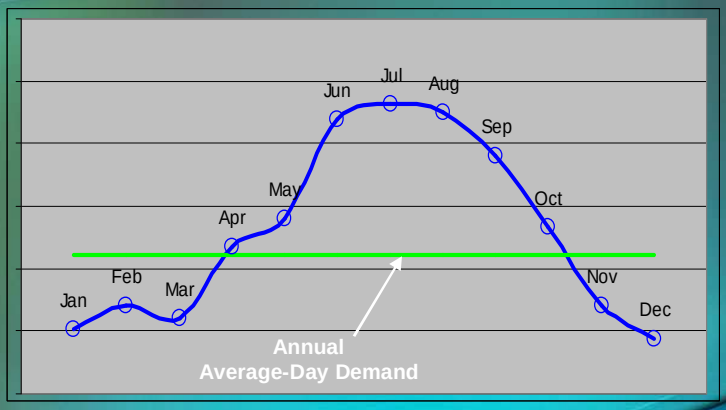
Average Monthly Demand



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Growth in Peak Demand

- **Single-Day Peak**
  - 2005: 9.26 MGD (4% Increase)
  - 2006: 9.84 MGD (6% Increase)
  - 2007: 10.22 MGD (6% Increase)
- **Peak 3-Day Average**
  - 2005: 8.89 MGD (4% Increase)
  - 2006: 9.50 MGD (7% Increase)
  - 2007: 9.81 MGD (3% Increase)
- **Peak Monthly Average**
  - 2005: 7.36 MGD (4% Increase)
  - 2006: 8.45 MGD (15% Increase)
  - 2007: 8.74 MGD (4% Increase)

Expansion planning is triggered at 85% capacity.

We're now at 82%.

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August 21, 2007 Workshop

- Identified two rate structures as being "Conservation-oriented"
  - Seasonal Rates
  - Inclining Block Rates

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What is a "ccf"?

"ccf" is a short-hand abbreviation for "Hundred Cubic Feet"

(Equals 748 Gallons)

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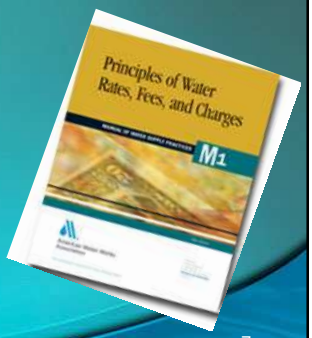
Seasonal Rate Structures

"The objectives of seasonal rates are to

- Better match price and cost recovery to demand patterns and
- Provide a price incentive for customers to reduce their consumption during peak-use periods."



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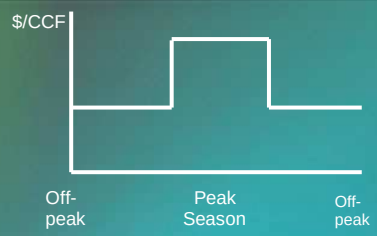
Seasonal Rate



Pro

- Encourages seasonal conservation
- Familiar – common among electric and gas utilities
- Can reduce cost to all customers

Con

- Customers see large seasonal swing in bill
- Risk of revenue instability due to weather

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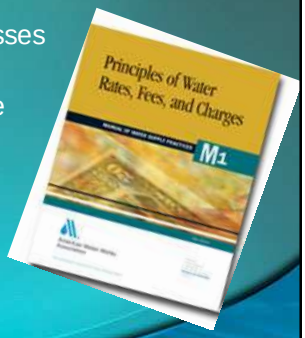
Inclining Block Rate Structure

"Inclining block rates should be considered when the utility

- Is able to distinguish separate customer classes for billing;
- Has the analytical ability to design block rate structures, including the ability to define the amount of water sold by block;
- Is confronting system capacity constraints or potential system expansion; and
- Would like to send a strong price signal."



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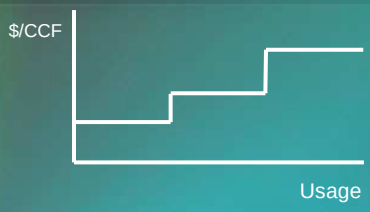
Inclining Block Rate



Pro

- Encourages conservation – Very strong price signal
- Flexibility in rate design
- Strongest demand-side management rate structure

Con

- Potential revenue volatility
- Can discourage new water-intensive businesses
- Complicated structures can be confusing to customers

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Recommended Approach

A blend of seasonal rates and inclining block rates

- **Seasonal Inclining Blocks** for "Residential" and "Irrigation" Customer Classes
- **Seasonal Flat Rates** for Commercial and Industrial Customer Classes

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First Question: How Much $?

- Existing Water Plant: 12 MGD
- Proposed Plant: 15 MGD
- "New" Capacity: 3 MGD

- Estimated annual debt service on $29.25M @ ~6% for 15 years = $2,845,000
- Annual debt service per MGD = $ 189,667
- Debt service due to "new" capacity (=20% of anticipated project) = $ 569,000

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Existing Rate Classes

- Residential (RS)
- Small Commercial (SC)
- Large Commercial (LC)
- Industrial (IN)

- Irrigation & Yard Water Services (IR)

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Seasonal Demand Patterns

(in cf/month)

	IN	LC	SC	RS	IR	
Winter '06 & '07	370,142	5,048,363	3,939,845	7,448,786	15,479	
Summer '07	468,456	5,848,368	5,146,077	8,372,323	2,419,792	
Seasonal Difference	98,314	800,005	1,203,232	923,537	2,404,313	5,429,401
% of Seasonal Difference	1.8%	14.7%	22.2%	17.0%	44.3%	100%
Debt Service Allocation	$10,200	$83,600	$126,300	$96,800	$252,100	

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Residential Block Sizes

- During the winter months, 90% of all residential accounts use 9.1 ccf or less.
- During the summer months, 90% of all residential accounts use 11.3 ccf or less (after removing all Yard Water Accounts).

- 1st Block Size: 0 to 10 ccf
- 2nd Block Size: 10 to 25 ccf
- 3rd Block Size: > 25 ccf

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Residential Block Sizes

- 1st Block Size: 0 to 10 ccf
- 2nd Block Size: 10 to 25 ccf
- 3rd Block Size: > 25 ccf

Debt Service Allocated to RS: $96,800

Used Summer '07 Demand Patterns
Used Multiples of Base Rate ($1.39/ccf)

• 0 to 10 ccf	$1.39/ccf	(Base Rate)
• 10 to 25 ccf	$2.78/ccf	(2x Base Rate)
• > 25 ccf	$4.17/ccf	(3x Base Rate)

Revenue Recovered: ~ $95,900

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Residential Block Sizes

- Recommendation for Refinement
  - Break Residential into 2 classes
    - "Small Residential" that would include single-family dwellings
    - "Large Residential" that would include some apartments, multi-plexes, etc.
  - Height of blocks ($'s) kept the same
  - Width of blocks (ccf's) varied

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Irrigation Block Sizes

- Avg. residential lot in Ames: approximately 10,000 sq ft
- Assume 20% impervious; 8,000 sq ft in landscape
- Irrigation needs: 1 inch per week
4 inches per month
- Typical July Rainfall: 4.4 inches per month
- Even in a severe drought (25% of "normal" rainfall), lawns only need 3" per month (0.25 ft) from irrigation

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Irrigation Block Sizes (cont.)

- 8,000 sq ft x 0.25 ft/mo = 2,000 cubic ft/mo
  = 20 ccf/mo
- Debt Service Allocated to IR: $252,100

• 1st Block:	0 – 20 ccf	$2.09/ccf	(1.5x Base Rate)
• 2nd Block:	20-50 ccf	$4.17/ccf	(3x Base Rate)
• 3rd Block:	>50 ccf	$6.95/ccf	(5x Base Rate)

Revenue Recovered ~ $248,200

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Customer Impacts

	Total Number of Accounts	Number of Accounts	
		Block 2	Block 3
Residential	13,881	1,828 (13%)	112 (1%)
Irrigation	1,833	303 (17%)	53 (3%)

Based on Summer 2007 Consumption

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Non-Residential Rates

- Non-discretionary water use varies widely
- Development of block sizes more arbitrary

- Possible Solution: Flat Summer Rate

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Non-Residential Rates

	IN	LC	SC
Summer Demand	468,456 cf/month	5,848,368 cf/month	5,146,077 cf/month
Debt Service Allocation	$10,200	$83,600	$126,300

[Debt Service Allocated to Class] ÷ [Summer Demand x 4 months] = Seasonal Peak Surcharge, $/ccf

Seasonal Peak Surcharge, $/ccf	$0.54/ccf	$0.36/ccf	$0.61/ccf
Summer Rate (Base + Seasonal Surcharge)	$1.93/ccf	$1.75/ccf	$2.00/ccf

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Conceptual Seasonal Rate Structure

Small Residential

0-10 ccf	$1.39/ccf
10-25 ccf	$2.78/ccf
> 25 ccf	$4.17/ccf

Large Residential

Block 1	$1.39/ccf
Block 2	$2.78/ccf
Block 3	$4.17/ccf

Irrigation

0-20 ccf	$2.09/ccf
20-50 ccf	$4.17/ccf
> 50 ccf	$6.95/ccf

Small Commercial
Seasonal Flat Rate
$2.00/ccf

Large Commercial
Seasonal Flat Rate
$1.75/ccf

Industrial
Seasonal Flat Rate
$1.93/ccf

Rates would apply to bills mailed July 1 through October 31 each year.

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Relationship to Rationing Ordinance

Residential
- Block 1: $1.39
- Block 2: $2.78
- Block 3: $4.17

Small Commercial
- Flat $2.00

Large Commercial
- Flat $1.75

Industrial
- Flat $1.93

Current Flat Rate:
$1.39/CCF
(~ 5 gallons for 1¢)

Stage 2 Rationing:
$7.50/CCF over 150%
(~1¢ per gallon)

Stage 3 Rationing:
$22.50/CCF over 110%
(~3 ¢ per gallon)

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Calculating a Bill

Residential Customer

5/8" Meter using 850 cf/month

Existing Rate Structure

Minimum Bill	$ 7.30
Consumption	$11.82
Total "Water" Bill	$19.12

Conceptual Rate Structure

Minimum Bill	$ 7.30
Block 1 Consumption (8.5 ccf @ $1.39)	$11.82
Block 2 Consumption (0 ccf @ $2.78)	$ 0.00
Block 3 Consumption (0 ccf @ $4.17)	$ 0.00
Total "Water" Bill	$19.12

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Calculating a Bill

Residential Customer

5/8" Meter using 3,000 cf

Existing Rate Structure

Minimum Bill	$ 7.30
Consumption	$41.70
Total "Water" Bill	$49.00

Conceptual Rate Structure

Minimum Bill	$ 7.30
Block 1 Consumption (10 ccf @ $1.39)	$13.90
Block 2 Consumption (15 ccf @ $2.78)	$41.70
Block 3 Consumption (5 ccf @ $4.17)	$20.85
Total "Water" Bill	$86.75

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Calculating a Bill

Large Commercial Customer

1-½" Meter using 20,000 cf/month

Existing Rate Structure

Minimum Bill	$ 58.40
Consumption	$278.00
Total "Water" Bill	$336.40

Conceptual Rate Structure

Minimum Bill	$ 58.40
Consumption ($1.75/ccf Summer Rate)	$350.00
Total "Water" Bill	$408.40

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Example Customer Impacts

	July 2007 Consumption, cf	Existing Rate Structure, $	Proposed Rate Structure, $
Barilla	445,200	6,305.08	8,709.16 (IN)
Swift Stop			
Store	4,070	63.87	88.70 (SC)
Car Wash	17,860	277.43	386.40 (SC)
Irrigation	5,000	98.70	196.10 (IR)
Target			
Store	20,750	346.83	421.53 (LC)
Irrigation	11,300	215.47	663.15 (IR)
Earl May			
Store	580	22.66	26.20 (SC)
Yard Water	5,160	86.32	178.02 (IR)
Hickory Park			
Restaurant	55,290	826.93	1,025.98 (LC)
Irrigation	5,510	83.89	202.35 (IR)

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Comparison to Other Iowa Water Rates

	600 cf	1,000 cf	10,000 cf	100,000 cf
Ames – Existing	15.64	18.42	168.20	1,623.60
Ames – Proposed	15.64 (RS)	18.42 (RS)	229.20 (SC)	1,983.60 (LC)
Median*	15.64	23.08	175.84	1,623.60
Iowa City	21.36	33.32	245.47	2,216.12
West Des Moines	17.63	27.38	247.05	2,449.50
Newton	13.34	19.06	117.94	1,079.41
Burlington	12.31	18.23	152.30	960.68
Altoona	25.48	39.13	346.25	3,417.50

* - Median of all Iowa cities > 10,000 population with lime softening

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Next Steps

- Define Customer Classes
- Revise Block Sizes based on new Customer Class Definitions
- Draft Ordinance
  - March 25 Council Meeting
  - Third Reading – May 13
  - Effective June 1
- Public Education would begin March 25.

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Related Issues

- Revise Rationing Ordinance to be consistent with new definitions
- Limit Sewer Exemption
  {Ames Municipal Code 28.304(9)}
- Implement “even/odd” day watering (voluntary/mandatory?)

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Seasonal Water Rate Structures

Are we on the right path?