

Public Sector Advisors



PRESENTATION TO

**Wisconsin Government Finance  
Officers Association**

December 3, 2015

Presenters: Nick Dragisich, Executive Vice President  
Joe Murray, CIPMA, Vice President

## Asset Renewal and Replacement

- **American Society of Civil Engineers Report Card on America's Infrastructure**
  - Annual spending needed Nationwide:
    - Water – \$17.0 Billion
    - Wastewater - \$30.0 Billion
- **Annual Spending needed Statewide Wisconsin:**
  - Water - \$355 Million
  - Wastewater – \$320 Million

## Asset Renewal and Replacement

- **Typical funding methods in use**
  - Fund some depreciation
  - Fully fund depreciation
  - Fund asset replacement over estimated lives
  - Develop asset management plan
    - Probability failure
    - Consequence of failure

## Asset Renewal and Replacement

- **Fund some depreciation**
  - Asset lives typically based on accounting standards not actual life
  - Minimizes impact on rates
  - Pushes problems out to future
  - If it ain't broke don't fix it



## Asset Renewal and Replacement

- **Fund depreciation**
  - Asset lives typically based on accounting standards not actual life
  - Has an impact on rates
  - Allows the replacement of some assets
  - Does not consider actual asset life
  - Ignores the effect of inflation and technology on future costs

## Asset Renewal and Replacement

- Fund asset replacement over estimated lives
  - Current cost of asset replacement per unit measure (e.g. lineal foot)
    - Divided by useful life to arrive at annual amount/unit measure
    - Amount/unit measure can be indexed for inflation
    - Amounts determined are set aside in reserve/replacement fund
  - Assumes assets will only last for their useful life

## Asset Renewal and Replacement

- Develop Asset Management Plan
  - Assess condition of in-service assets
  - Estimate probability of failure
  - Estimate cost of failure
  - Determine consequence of failure
    - Probability of failure x cost of failure
  - Develop asset replacement plan
  - Relatively expensive/mostly done by larger utilities

## Asset Renewal and Replacement

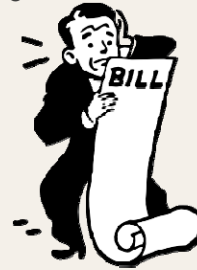
- **City of Woodbury, Minnesota**
  - Suburban city east of St. Paul
  - Incorporated in 1967
  - Population (2014 estimate) - 66,807
  - Median household income - \$96,534

## Asset Renewal and Replacement

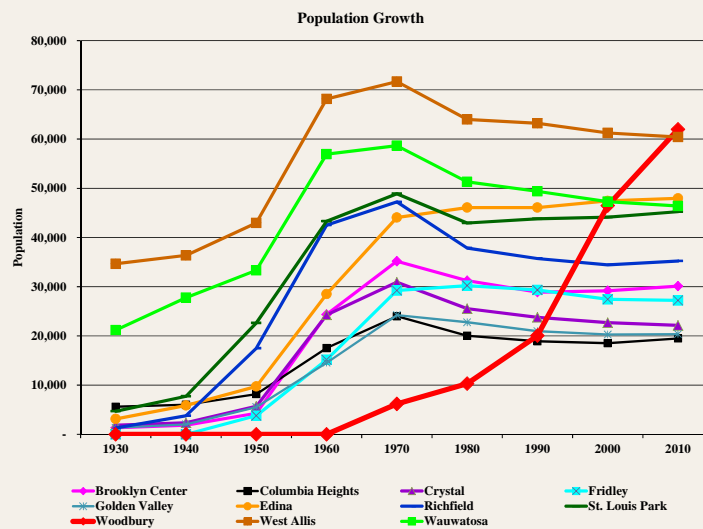
- **City of Woodbury, Minnesota (cont.)**
  - Provides water and sewer services to approximately 20,700 residential and commercial customers
  - Water supply system
    - Eighteen wells
      - Pumping capacity of 19,184 gallons per minute
    - Storage capacity 10 million gallons
      - Five water towers and ground reservoir
  - Wastewater collection

## Asset Renewal and Replacement

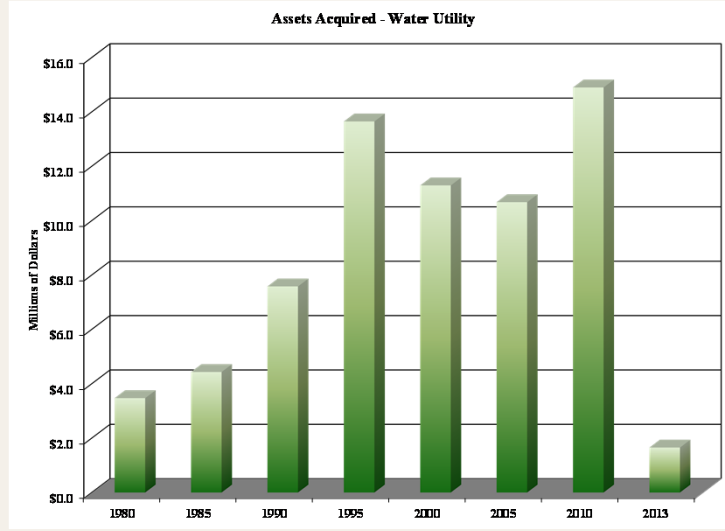
- Water and Sewer Utilities
- Capital assets reaching end of useful lives
  - Determine cash needs for annual replacement
  - Possible funding mechanisms for future replacements
  - Avoid significant rate increases



## Asset Renewal and Replacement



## Asset Renewal and Replacement

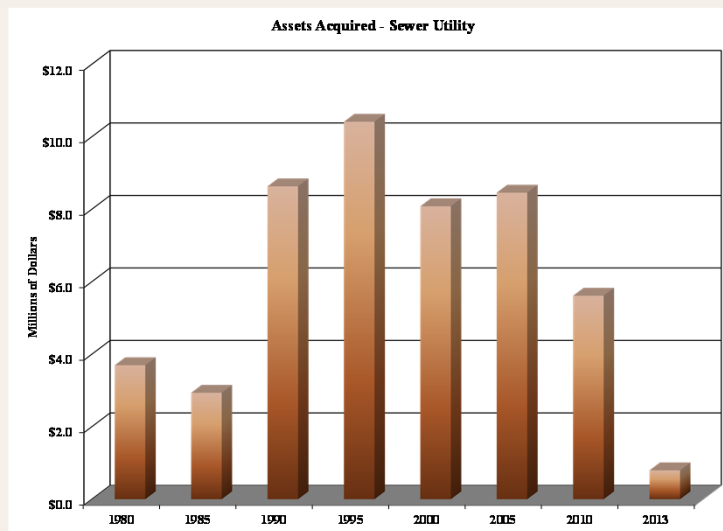


Public Sector Advisors

12



## Asset Renewal and Replacement



Public Sector Advisors

13



## Asset Renewal and Replacement

- Goal
  - Determine amount needed for annual funding
    - Provide a cash flow over the period that would enable City to pay for asset renewal and replacement
    - Assumed a 1.0% investment interest rate
  - Provide City Council with a rationale, strategy and benefits of funding asset renewal and replacement

## Asset Renewal and Replacement

- Based on knowledge of water and sewer assets
  - Historical failure
  - Asset replacement
  - Inspections
    - Closed circuit television
    - On-site construction both public and private
    - On-site visual for above ground assets



## Asset Renewal and Replacement

- Based on knowledge of water and sewer assets (continued)
  - Projected useful lives
  - Trade journals
  - Networking with others

## Asset Renewal and Replacement

- Replacement costs
  - Estimated from original costs
  - Inflated to year of replacement by average annual change in the American City and County Construction Cost Index from 1989 through 2012
- Replacement costs for equipment
  - Adjusted by a 1.25 replacement cost factor to account for increased costs resulting from technological improvements

## Asset Renewal and Replacement

- Multiple failure scenarios were developed
  - Four provide a range of replacement costs reflecting the likelihood that assets would last longer than City assigned life
  - One probabilistic scenario
    - Blended previous four scenarios
      - Attempt to be most realistic by recognizing the typical situation where assets fail on a more random basis

## Asset Renewal and Replacement

- Five scenarios developed for replacement as follows:
  - Replacement at the City assigned life
  - Replacement at 1.25 times the City assigned life
  - Replacement at 1.5 times the City assigned life
  - Replacement at 2.0 times the City assigned life
  - Replacement on a probabilistic basis

## Asset Renewal and Replacement

- Five scenarios developed for replacement (continued)
  - Replacement on a probabilistic basis
    - 40% of equipment replaced at the City assigned life
    - 30% replaced at 1.25 times the City assigned life
    - 20% replaced at 1.5 times the City assigned life
    - 10% replaced at 2.0 time the City assigned life

## Asset Renewal & Replacement

- Estimating failure
  - Rehabilitation of wells and water towers
    - Based on actual timing and cost of initial rehab from date asset placed in service and cost of rehab
    - Wells not yet rehabbed projected based on average time of 18 years based on historical experience
      - Cost of the first rehab estimated to be 30% of original cost
  - Rehabilitation of water towers
    - Projected based on average time to rehabilitation of 15 years

## Asset Renewal & Replacement

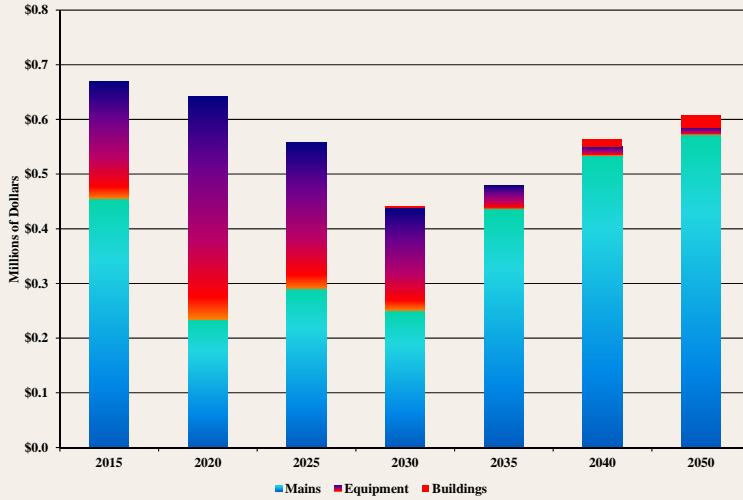
- Estimating failure
  - Rehabilitation of water towers
    - Projected based on an average time to rehabilitation of 15 years

## Asset Renewal & Replacement

- The City-assigned life for water mains increased to 80 years
- City-assigned life for sewer mains was increased to 125 years
- Accounted for probability an asset replaced at an earlier time would be less likely to fail later
  - An asset replaced at City assigned life would not need to be replaced again in other scenarios

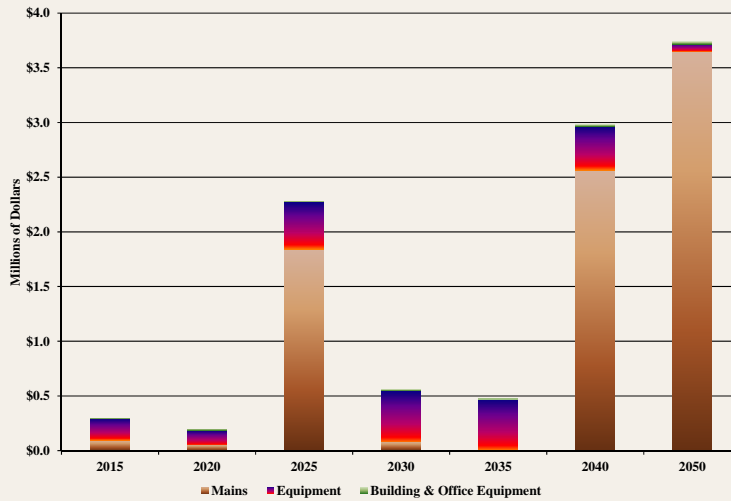
## Asset Renewal & Replacement

City of Woodbury, Minnesota Water Utility  
Asset Replacement Based on Weighted Average Failure



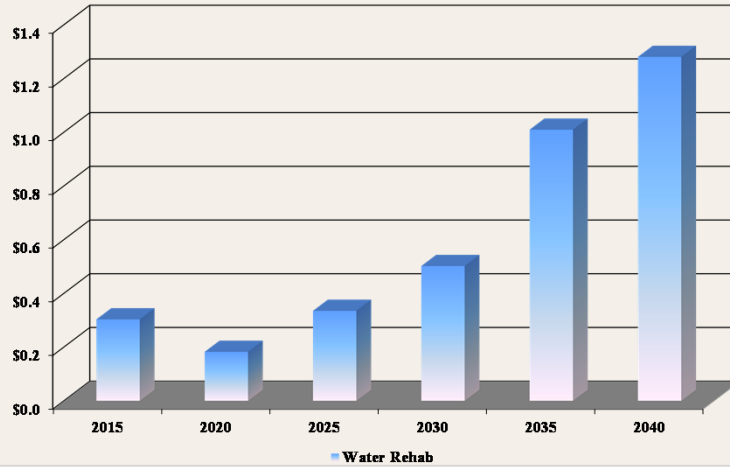
## Asset Renewal & Replacement

City of Woodbury, Minnesota Sewer Utility  
Asset Replacement Based on Weighted Average Failure



# Asset Renewal & Replacement

City of Woodbury, Minnesota Water Utility  
Asset Rehabilitation Based on Weighted Average Failures



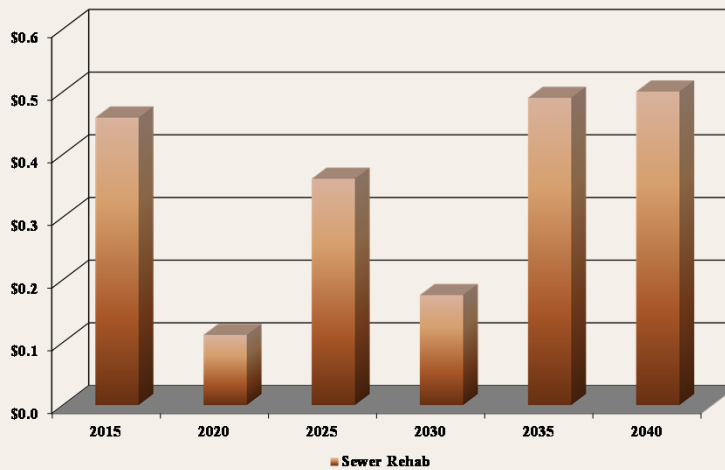
Public Sector Advisors

26



# Asset Renewal & Replacement

City of Woodbury, Minnesota Sewer Utility  
Asset Rehabilitation Based on Weighted Average Failures



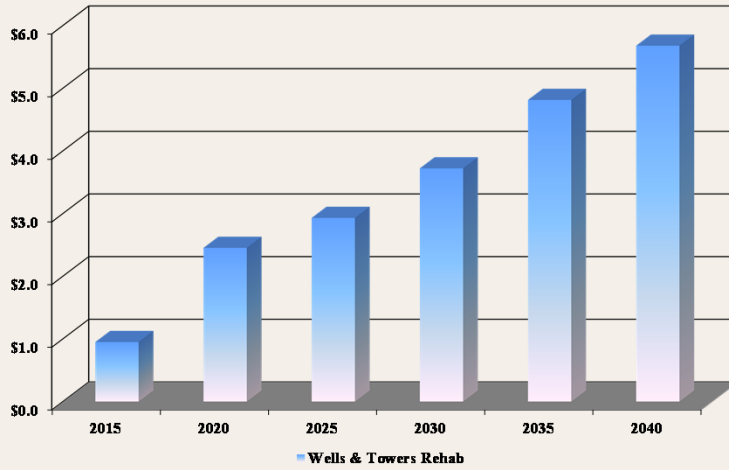
Public Sector Advisors

27



# Asset Renewal & Replacement

City of Woodbury, Minnesota Water Utility  
Asset Rehabilitation Wells and Towers



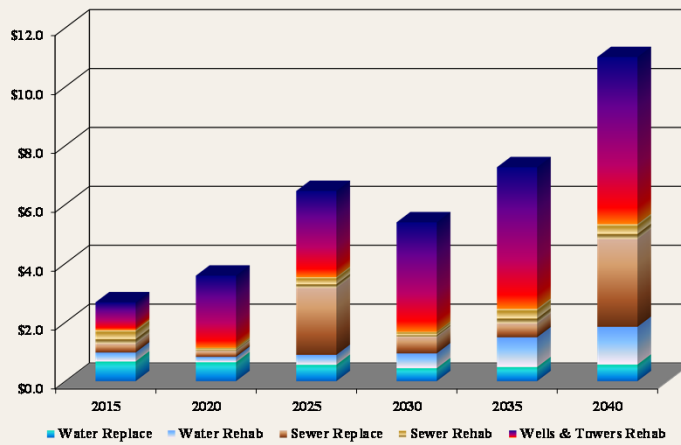
Public Sector Advisors

28



# Asset Renewal & Replacement

City of Woodbury, Minnesota Water and Sewer Utilities  
Asset Replacement and Rehabilitation Based on Weighted Average Failures



Public Sector Advisors

29



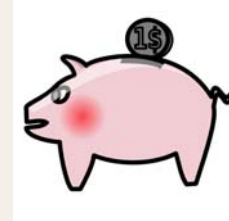
## Asset Renewal & Replacement

- Projected cost based on weighted average failure

Year	Water Replace	Water Rehab	Sewer Replace	Sewer Rehab	Wells & Towers Rehab	Total
2015	\$ 669,550	\$ 303,060	\$ 297,006	\$ 458,661	\$949,502	\$ 2,677,779
2020	\$ 642,831	\$ 182,237	\$ 194,397	\$ 111,906	\$2,452,357	\$ 3,583,727
2025	\$ 557,595	\$ 334,921	\$ 2,275,680	\$ 361,059	\$2,930,154	\$ 6,459,409
2030	\$ 441,476	\$ 501,687	\$ 555,172	\$ 175,467	\$3,720,967	\$ 5,394,770
2035	\$ 478,972	\$ 1,009,404	\$ 473,784	\$ 490,157	\$4,813,255	\$ 7,265,572
2040	\$ 564,412	\$ 1,280,352	\$ 2,983,897	\$ 500,214	\$5,678,366	\$ 11,007,240
2050	\$ 608,650	\$ 4,659,584	\$ 3,738,172	\$ 1,130,241	\$16,175,963	\$ 26,312,609
2060	\$ 8,880,445	\$ 7,169,214	\$ 90,301	\$ 4,257,039	\$24,106,390	\$ 44,503,389
<b>Total</b>	<b>\$ 12,843,930</b>	<b>\$ 15,440,459</b>	<b>\$ 10,608,408</b>	<b>\$ 7,484,742</b>	<b>\$ 60,826,955</b>	<b>\$ 107,204,494</b>



## Asset Renewal & Replacement



- Projected Funding Plan 2014 - 2031

Year	Replace and Rehab W & S	Rehab Wells & Towers	Total Replacement & Rehab	Annual Funding	Cash Flow
2014	864,138	474,751	1,338,889	1,425,000	86,111
2015	864,138	474,751	1,338,889	1,440,000	187,221
2016	226,274	490,471	716,745	1,455,000	925,476
2017	226,274	490,471	716,745	1,470,000	1,678,731
2018	226,274	490,471	716,745	1,485,000	2,446,985
2019	226,274	490,471	716,745	1,500,000	3,230,240
2020	226,274	490,471	716,745	1,515,000	4,028,494
2021	705,851	586,031	1,291,882	1,530,000	4,266,612
2022	705,851	586,031	1,291,882	1,545,000	4,519,731
2023	705,851	586,031	1,291,882	1,560,000	4,787,849
2024	705,851	586,031	1,291,882	1,575,000	5,070,967
2025	705,851	586,031	1,291,882	1,590,000	5,369,085
2026	334,760	744,193	1,078,954	1,605,000	5,895,131
2027	334,760	744,193	1,078,954	1,620,000	6,436,177
2028	334,760	744,193	1,078,954	1,635,000	6,992,223
2029	334,760	744,193	1,078,954	1,650,000	7,563,269
2030	334,760	744,193	1,078,954	1,665,000	8,149,315
2031	490,463	962,651	1,453,114	1,680,000	8,376,201



## Asset Renewal & Replacement



- Projected Funding Plan 2032 - 2050

Year	Replace and Rehab W & S	Rehab Wells & Towers	Total Replacement & Rehab	Annual Funding	Cash Flow
2032	490,463	962,651	1,453,114	1,695,000	8,618,087
2033	490,463	962,651	1,453,114	1,710,000	8,874,972
2034	490,463	962,651	1,453,114	1,725,000	9,146,858
2035	490,463	962,651	1,453,114	1,740,000	9,433,743
2036	1,065,775	1,135,673	2,201,448	1,755,000	8,987,295
2037	1,065,775	1,135,673	2,201,448	1,775,000	8,560,847
2038	1,065,775	1,135,673	2,201,448	1,795,000	8,154,400
2039	1,065,775	1,135,673	2,201,448	1,815,000	7,767,952
2040	1,065,775	1,135,673	2,201,448	1,835,000	7,401,504
2041	1,013,665	1,617,596	2,631,261	1,855,000	6,625,243
2042	1,013,665	1,617,596	2,631,261	1,875,000	5,868,982
2043	1,013,665	1,617,596	2,631,261	1,895,000	5,132,721
2044	1,013,665	1,617,596	2,631,261	1,915,000	4,416,460
2045	1,013,665	1,617,596	2,631,261	1,935,000	3,720,199
2046	1,013,665	1,617,596	2,631,261	1,955,000	3,043,938
2047	1,013,665	1,617,596	2,631,261	1,975,000	2,387,678
2048	1,013,665	1,617,596	2,631,261	1,995,000	1,751,417
2049	1,013,665	1,617,596	2,631,261	2,015,000	1,135,156
2050	1,013,665	1,617,596	2,631,261	2,035,000	538,895

## Questions/Contact Information

710 North Plankinton Avenue, Suite 804  
Milwaukee, Wisconsin 53203

380 Jackson Street, Suite 300  
St. Paul, Minnesota 55101

Joe Murray  
414.220.4257

[jmurray@springsted.com](mailto:jmurray@springsted.com)

Nick Dragisich  
651.223.3012

[ndragisich@springsted.com](mailto:ndragisich@springsted.com)

*Our Mission - Springsted provides high quality, independent financial and management advisory services to public and non-profit organizations, and works with them in the long-term process of building their communities on a fiscally sound and well-managed basis.*