December 13, 2011

Efficiency Study Meeting 2

The citizen's advisory committee for the water and sewer efficiency study met with City staff and HDR Engineering, Inc. on December 8, 2011 to cover the topics of HDR's review of organizational structures and their review of the planning process. All members were present.

See the next slide for the power point presentation given by HDR on December 8, 2011.

ADVISORY COMMITTEE MEETING

Water and Sewer Operations Efficiency Study

December 8, 2011

The City of Fort Smith ARKANSAS

Presented by

HDR Engineering, Inc.

HDR

Overview of the Presentation

- Review of Last Meeting
- Selection of Advisory Committee Chairperson
- Efficiency Study Topics for Today:
  - Review of Organizational Structures
  - Review of the Planning Process
- Next Steps

Review of Introductory Meeting

- Introduced Personnel
  - Key City Project Team Members
  - Key HDR Project Team Members
- Discussed Advisory Committee Role (will review again)
- Discussed Efficiency and what it means
- Discussed Technical Approach Including:
  - Overview of Organizational Structures
  - Overview of Planning
- Presented the City's Water and Wastewater Systems

Role of the Advisory Committee

- Goal: To provide an effective public involvement process during the study
- An Advisory Committee should:
  - Participate and have two-way communication (listen and provide input/feedback)
  - Consider differing viewpoints
  - Consider local community values and needs
  - Recognize the challenges of providing safe drinking water and wastewater collection and treatment services in a cost-effective and efficient manner
  - Provide Committee recommendations throughout
  - Review draft final report and study

Advisory Committee "Ground Rules"

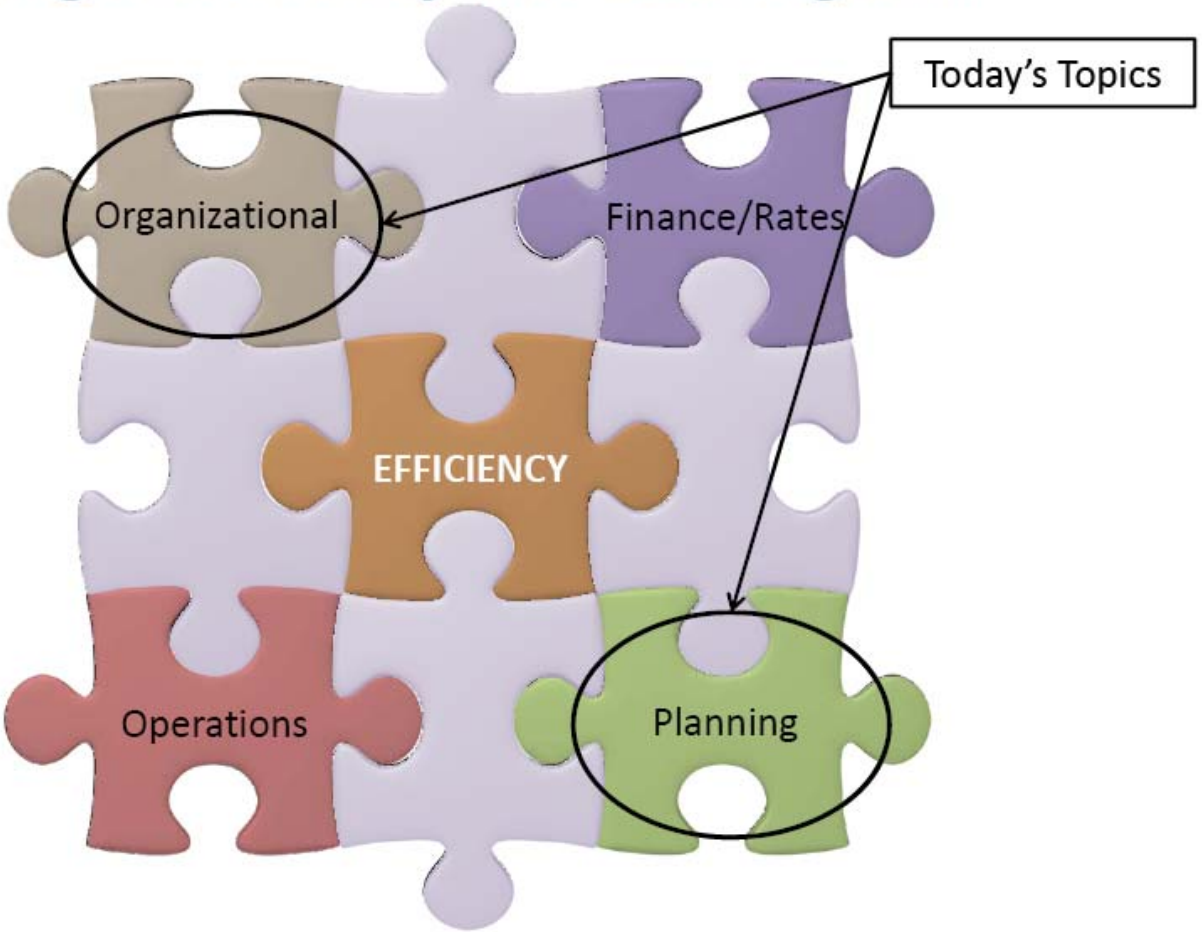
- Have a fun and enjoyable experience!
- Be on time for meetings; if you can't attend, please let us know
- Be respectful of all opinions and viewpoints
- HDR will manage the discussion of the group to keep the group focused

Selection of the Advisory Committee Chairperson

- Roles of Chairperson
  - Responsible for collecting and summarizing Committee's recommendations on the Draft Report
- All Committee communications should go through Mitzi Kimbrough
  - (479) 784-2271 mkimbrough@fortsmith.gov

Key Components of Efficiency

Putting the Pieces of the Puzzle Together



Water & Sewer Efficiency Study Citizen's Advisory Committee Meeting December 8, 2011

Efficiency Evaluation

Most Efficient

Least Efficient

Capability Maturity Model – Carnegie Mellon

Level	Definition
Optimized	Continual improvement and refinement with documented standards and procedures
Managed	Quantitative measurements are defined and used for business improvement and setting quality standards
Defined Approach	Defined systems supported with a repeatable approach that is documented and communicated within the organization
Repeatable	Reactionary and without a documented approach
Initial	Limited awareness within organization

Efficiency Evaluation

- Evaluations of Cities are subjective
- Reaching "Optimized" level in every category may not always be practical or beneficial
  - Example – Fleet Maintenance of vehicles
    - Changing oil on regular schedule is a “defined approach”
    - Testing the oil to determine a more “optimized” frequency for oil changes will not bring additional value over the manufacturer’s recommendation
- Organizational benchmarking is different than benchmarking chemical or power consumption
- Benchmarking against yourself is more meaningful
  - Establishes a baseline to measure improvement
  - Helps identify strengths weaknesses in the organization
  - Sets up parameters for organizational planning
  - Allows you to see how you have improved as an organization

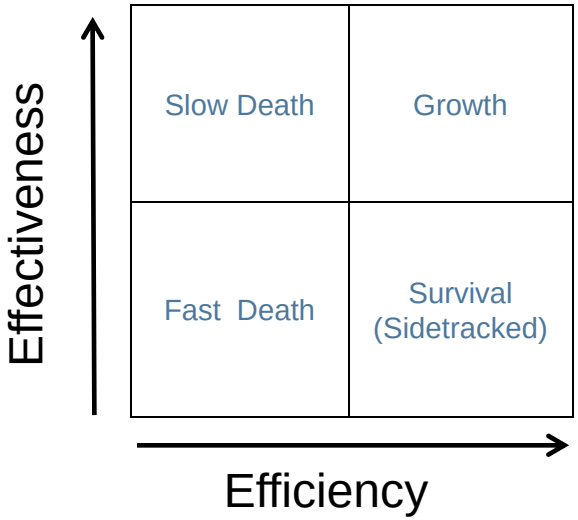
What are these observations and recommendations based on?

- Interviews with City staff
- Review of documents provided by the City
  - Organization
  - Planning
- Discussed the interview results internally to HDR
- HDR conducted efficiency evaluation

MASTER PLAN
for
WATER & SEWER SERVICE
in the
SOUTHERN GROWTH AREA
& CHAFFEE CROSSING

PROJECT NO. 07-10-E1

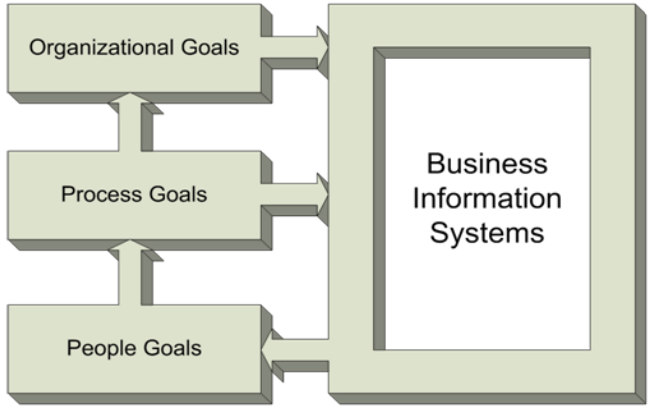
FEBRUARY 2010



Review of Organizational Structures

Task 3 – Review of Organizational Structures

- **Task Objective:** Review the organizational structure to better understand and define the levels of responsibility for the Utility, Finance, and other support services, at three levels of performance; strategic, process and people
- Subtasks
  - Strategy (Org.) Review
  - Business Process Review

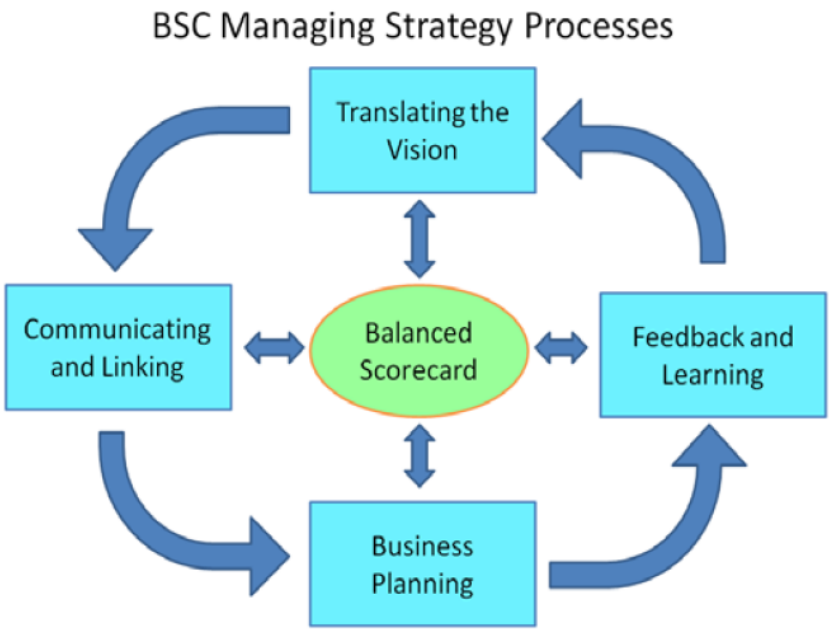


Review of Organizational Structures/Issues

- Evaluate the following areas:
  - Strategic Goals and High Level Business Processes
  - Billing/Collection Process Efficiency
  - Operational Business Procedures
  - Critical Business Information Systems
  - Benchmarking
- The study is not complete:
  - This is a preview of what will be explained in the report
  - Efficiency savings have not yet quantified (determined the amount of savings or efficiency)

Strategic Goals and High Level Business Processes

- Examples of Goals and Processes:
  - Vision and Mission
  - Long Term Goals
  - Annual Business Plan
  - Service Levels
  - Performance Metrics
  - Regulatory Compliance
  - Risk Management
  - Organizational Flexibility
- Efficiency Rating
  - Repeatable to Defined Approach



From: Fort Smith Strategic Management Development Plan

Strategic Goals and High Level Business Processes

- Examples of Positive Areas
  - Regulatory Compliance
    - Working on consent decree for wastewater improvements
    - Meeting Water quality requirements
  - Customer Concerns
    - Defined approach for handling customer concerns
- Areas for Improvement
  - Risk Management
    - Risk management plan and policy needed – Current decision process does not include defined risk component
  - Customer Satisfaction
    - No way to quantify – can't tell if improving
  - Human Relations
    - Succession plan would protect utility from personnel losses

Metering/Billing/Collection Process Efficiency

- Finance (Billing and Collection):
  - Activation and deactivation of service
  - Collections
  - Manage 3rd party billing system
- Utility Responsibilities
  - Meter reading/repair
  - Meter replacement
  - New service connection installation
- Efficiency Rating
  - Defined Approach

Metering/Billing/Collection Process Efficiency

- Examples of Positive Areas
  - Defined Protocols
    - Meter reading
    - New service installation
    - First responders
  - Staff levels seem appropriate on the billing side
- Areas for Improvement
  - Additional staff may be required to limit time on work orders
  - No measure of “billing” success
  - Meter readers
    - Least efficient meter reading system (compared to AMI)
    - Further investigation to implement automatic meter reading
    - May free persons to aid in understaffed areas
    - Short-term loss but potentially long-term gain
  - Meter Testing
    - Large meters cannot initially be tested before installed
    - Could help identify lost revenue

Operational/Business Procedures

- Procedures occurring day-to-day, including:
  - Operations and Maintenance of the System
    - Cleaning
    - Responding to Customer Complaints
    - Repairing/replacing old meters
  - Spill Response and Reporting (Sanitary Sewer Overflows)
  - Emergency Response Planning
  - Safety Program
  - Stormwater Management
- Efficiency Rating
  - Defined approach

Operational/Business Procedures

- Examples of Positive Areas
  - Performance reviews are done for City Staff
  - Proactive cleaning lists for sewers
  - Collecting data in areas of poor water quality or low pressure for future study
- Areas for Improvement
  - Interviews indicated more staff was needed in the following areas:
    - Mapping (GIS)
    - Sewer maintenance
    - Water meter change-out
    - CMOM (Capacity, Management, Operation, and Maintenance)
  - Activities are reactive rather than proactive.
  - Programs that could be implemented to limit future maintenance include:
    - Root treatment program (sewers)
    - Fats, oils, and grease cleaning program
    - Sewer preplanned condition assessment
    - Water main assessment
    - Valve exercise program

Critical Business Information Systems

- Key Business Information Systems:
  - Lucity:
    - Program is an asset and maintenance management tool
    - Software allows City to organize and manage data
    - Should be fully integrated with GIS to provide geographical relationships and spatial analysis
    - Can track infrastructure items and produce a history including data on all inspections and work performed
    - Only as useful as the data that is entered into it
  - GIS (Geographical Information System):
    - Geographical based data management system; works as a “data source” with Lucity; very powerful tool
  - Others: AutoCAD, Datatronics billing, MVRS reading, phone recording system, Email
- Efficiency Rating
  - Defined Approach

Critical Business Information Systems

- Examples of Positive Areas
  - Lucity is used to track inventory and condition assessment
- Areas for Improvement
  - City has very powerful management tools, but needs to utilize their full capability to gain efficiency

Critical Business Information Systems

- Areas for Improvement (continued)
  - Lucity needs to be more fully utilized
    - Currently tied to inventory; also needs to be tied to a value
    - Needs to be interconnected to GIS system
    - Some data gaps need to be rectified
    - Sanitary Sewer Overflow locations need to be tied to an asset (need GIS information)
  - Water and sewer assets are in AutoCAD
    - Have not been transferred over to GIS
  - Limited staff for this task
  - Defined Standards for As-Built Drawings should make integration from AutoCAD to GIS easier.

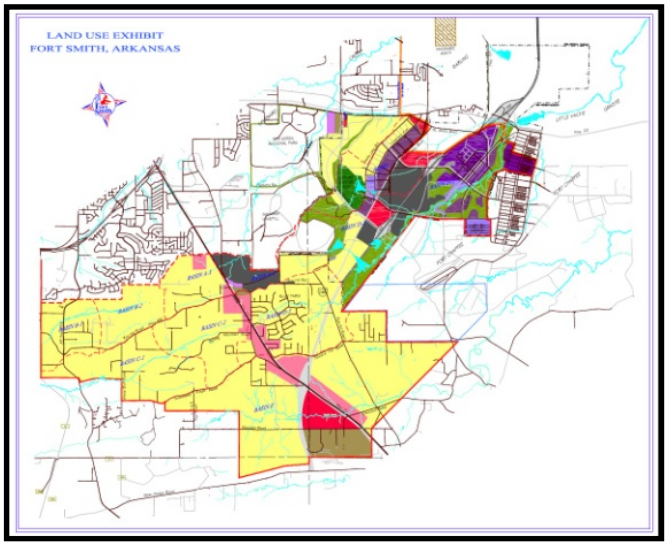
Benchmarking

- Where does Fort Smith want to be?
  - Strategic Goals and High Level Business Processes
  - Billing/Collection Process Efficiency
  - Operational Business Procedures
  - Staff Interviews and Ideas for Improvement
  - Critical Business Information Systems

Review of Planning

Task 5 – Review of Planning

- **Task Objective:** Review and assess the City's past practices as it relates to water and wastewater master/comprehensive planning. The planning process influences and directly impacts the short and long-term efficiencies of the organization.
- Subtasks
  - Review of Demand Forecasts
  - Capital Planning Process
  - Financial Capability



Review of Planning

- We will address the following issues:
  - Water Demand and Wastewater Flow Projection Forecasting
  - Planning Process for Developing the Capital Improvements Program (CIP)
  - Financial Capability of the City
- We have not yet quantified efficiencies (determined the amount of savings or efficiency to be gained)

Water Demand and Wastewater Flow Projection Forecasting

- Verifying Water Demand and Wastewater Flow Projection Data
  - Projecting Water Demands and Wastewater Flows into the future is useful in anticipating infrastructure needs
  - Recent trends in water usage reflect changes in the economy as well as public awareness towards water resources
  - Projecting water and wastewater flows begins with projecting population
    - 2010 Water/Sewer Master Plan by Mickle, Wagner, & Coleman, Inc. discussed three methods of projection
    - Other studies also exist with similar values (Burns & McDonnell, 2009)
    - 0.94% annual growth rate is a reasonable value

Year	Linear Regression	Comprehensive Plan		Bi-State MPO	
		Low	High	Low	High
2000	80,268	-	-	-	-
2025	97,000	99,000	110,300	-	-
2030	100,000	-	-	103,000	121,000
Rate	0.81%	0.93%	1.50%	0.94%	1.69%

Water Demand and Wastewater Flow Projection Forecasting (Continued)

- Population projections are used to make demand projections:
  - Water
    - Currently serve 156,000 customers (including wholesale)
    - Supplies approximately 26.57 million gallons per day (mgd)
    - 170 gallons per person per day (high)
    - Arkansas Average 135 gal/person/d (Qasim et al, 2000).
    - Per capita water usage is likely high due, in part, to large industrial users
  - Current Trends in the Market
    - Per capita water usage is remaining constant or decreasing over time
    - Due to conservation measures
  - Results
    - 170 gallons/person/day is likely to remain constant or decrease (assume it remains constant)
    - At projected growth rate, there will be 186,400 customers in 2030.
    - City would need to produce 31.7 mgd in 2030 (water loss not included)
    - Consistent with Burns and McDonnell report
    - Water Plants current capacity of 63.5 mgd
    - Incentives to Industries to decrease their usage may be beneficial
    - The Utility could undertake other measures to more accurately measure usage, such as assuring the accuracy of meters and working to decrease water loss

Water Demand and Wastewater Flow Projection Forecasting (Continued)

- Water demand projections can be used to make wastewater flow projections:
  - Wastewater
    - Currently serve 91,000 customers
    - City treats approximately 15 mgd on an average day, and has capacity for 22 mgd
    - 165 gallons per person per day (high); would expect value between 100 and 155 gallons/person/day, (M&E, 2003)
    - Potential reasons for higher flows
  - Current Trends in the Market
    - Wastewater trends are more system specific, greatly depends on condition of the system
  - Results
    - At the growth rate indicated, there will be 108,700 customers in 2030.
    - City would need to treat 17.9 mgd in 2030, not considering adding customers from other sewer systems
    - Wastewater Plants have a current capacity of 22 mgd, and will continue to experience issues during wet weather
    - Per capita flow may be reduced through water conservation and system rehabilitation

Water Demand and Wastewater Flow Projection Forecasting (Continued)

- Efficiency Rating
  - Managed
- Examples of Positive Areas
  - Population projections are not unreasonably aggressive
  - Water demand projections have been investigated through the year 2060 (Burns & McDonnell, 2009)
- Areas for Improvement
  - Wastewater capacity (wet weather) will continue to be an issue into the future, sewer system rehabilitation should be examined
  - Water loss is somewhat high 14%-16% for planning and rate calculations (10% considered to be an average amount)
  - Per capita water usage is higher than would be expected
    - Offer incentives to large users to conserve
    - Check accuracy of meters
    - Identify locations of water loss

Planning Process for Developing the Capital Improvements Program (CIP)

- Capital Planning Process (General)
  - Infrastructure improvements should be prioritized based on need
    - "Need" can have several meanings, from failing infrastructure to meeting a government issued consent decree to providing new service
    - Thus, an organized way to assess "need" is required, to properly prioritize projects (the financial aspect of this decision will be discussed next)
- Current Process
  - City has Water and Sewer Master Plans
  - Utilities Department gathers data, reviews historical data and analysis, including O&M, and reviews all projects
  - Projects are then compared to the amount of funding available
  - Committee of 2-3 knowledgeable people then prioritize the projects
- Efficiency Rating
  - Defined Approach

Planning Process for Developing the Capital Improvements Program (CIP)

- Examples of Positive Areas
  - Wastewater Master Plan to be updated in 2012
  - Utility is doing the best with the information and systems available
- Areas for Improvement
  - CIPs are evaluated each year, But should be updated every 5 years
  - Risk Management is needed:
    - Current process does not appear to take into account any risk management
    - Risk management would allow for a transparent process taking into account available knowledge about the system
    - Helpful in justifying project funding
    - Would allow the CIP to include significant maintenance issues

Financial Capability Of the Utility

- A Capital Improvements Program is only useful if it can be funded at reasonable utility rates or with a reasonable amount of debt service
  - Should include the following:
    - Funding Plans
    - Capital Funds Set Aside
    - Rehabilitation and Replacement Funding
    - Maintenance Costs
- Efficiency Rating
  - Defined Approach

Financial Capability of the City

- Examples of Positive Areas
  - Favorable Bond Rating (AA-)
  - Some renewal and replacement funds
  - Rate and sales tax increases were made to fund the required debt service requirements
- Areas for Improvement
  - It is difficult to identify how prioritization decisions are made
    - Levels of service
    - Criticality of need
    - Risk management planning
    - Asset management planning
  - Resources are limited to manage improvement projects
  - Board sets budget based on their perceived budget constraints rather than clearly identified procedures

Summary of Recommendations

- The Utility is not broken, in fact, it is doing well in many areas
  - Qualified, experienced, and knowledgeable staff
  - Good facilities
  - In the next 20 years, staff will be retiring and equipment will be aging, so the time to plan is now
- Major Recommendations
  - Need to improve the use of information systems the Utility already has to take advantage of the knowledge in the Utility
  - Risk and Asset Management Planning is needed so that decisions (CIP, staffing obligations) are more transparent and based on documented procedures and information
  - Need to prioritize improvement projects based on risk management or service level goals – working hard (which they are) versus working efficiently.

Next Steps

Next Steps

1. HDR still has lots of work and research
2. Financial quantification of recommendations
3. Board Briefing – January 10, 2012
4. Next meeting:
    1. Water and Sewer Operations
    2. Financing/Rates
    3. January ???????

Fort Smith UTILITY DEPARTMENT

QUESTIONS?????