

**CITY COUNCIL
INFORMATION COMMITTEE MEETING
Wednesday, May 21, 2008 12:30 p.m.**

ALDERMEN PRESENT:

Council President Malcom Chapman, Ron Weifenbach, Deb Hadcock, Karen Gundersen Olson, Lloyd LaCroix.

ALDERMEN ABSENT:

Sam Kooiker, Ron Kroeger, Bill Okrepkie, Bob Hurlbut, Tom Johnson.

STAFF PRESENT:

Jason Green, Robert Ellis, Marcia Elkins, Bob Dominicak, Jim Cook.

TOPIC: PRESENTATION OF THE UTILITY SYSTEM MASTER PLAN

Dan Coon, Project Engineer for the City of Rapid City, opened the meeting with an overview of the objectives of the Utility System Master Plan. He explained that the goal of this presentation was to identify the key tools that were developed as part of this project. The focus of this project was development of the tools that will be necessary for the City to manage and plan for the water and wastewater expansion and maintenance of the existing system. Coon explained that he is the City's Project Manager for this project, and then introduced Mark Lichtwardt of Burns & McDonnell Engineering, who is the Project Manager on the engineering firm's side of the project. Coon also introduced Dan Ferber and Dave Muck with Ferber Engineering, a local engineering firm that is involved in the project; Dr. Perry Rahn, Al Foster with FMC, Sig Svejnieks from Banner Associates, and Dan Bejerke from KAD Engineering. Coon thanked these individuals for their contributions to the project.

Coon then turned over the floor to Mr. Lichtwardt, who first explained the project's goals and objectives. The goal was to develop a real-time master plan that will need to be kept up to date but five to ten years from now will be useful for having developed tools for planning & engineering analysis. The centralized data approach that the City is using overcomes inconsistencies and inefficiencies of having data kept in many different places. The centralized approach ties in maintenance, design, GIS, and modeling elements. Lichtwardt said the first step was to analyze the location and water demand. A graphic showing regions classified as Tier 1 and Tier 2 was displayed. The consulting group identified Tier 1 as an immediate planning area and Tier 2 as more regional planning. For goal through 2030, the group focused on Tier 1.

Olson asked how they decided what constituted Tier 1 and 2. Lichtwardt explained that the consulting group looked at the City's current service area, potential wholesale users, majority of growth in the area and took existing information provided by the City of Rapid City's Growth Management department, as well as zoning and land use plans from Meade County. Olson

asked whether the northern boundary was a creek. Lichtwardt said yes, and that the group looked at where the water sheds as well.

Lichtwardt said the consulting group looked at population projections. Tier 1 and Tier 2 were projected out to 2030 and the group used the information to do extensive analysis including historical and present usage and projected water demands for 2015 and 2030. Water demands throughout Rapid City are not consistent as far as what someone would use in the middle of the summer with a big yard to water versus someone in the middle of town. The group found that in the Southwest part of town, lawns are larger and had a much larger peaking factor than other areas. The group did same thing with projected water flows and performed field testing.

Three planning tools that the consulting group developed are Geodatabases, Hydraulic Models, and Computerized Maintenance Mgmt System (CMMS). Lichtwardt explained that this is the foundation of what the group developed, and provides the tools for planning that can be used for years to come.

Mr. Lichtwardt summarized the kinds of planning tools that were developed. The group developed three geo-databases: land use, water distribution system, and wastewater collection systems. Hydraulic models for water and sewer were also developed, and finally, a computerized maintenance management system (CMMS).

First, Lichtwardt addressed land use geo-databases. He explained that they incorporate data from the City's Growth Management department and other avenues to comprise a map of water use, whether residential, commercial, or industrial. That information was then used in combination with water and sewer geo-databases. Lichtwardt said that it's very important to know how each piece of land is going to be used as the City moves forward with its planning. The City of Rapid City had very good water maps and good information as far as pipe and valve locations. The consulting group built the geo-database from this existing data. The geo-database also incorporates the diameter, material, and filling type of valves and pipe locations and will be a very useful tool for many years to come. Everything is tied into location in aerial maps. Lichtwardt pointed out that it's very easy to identify, for example, if a water main breaks, which homes are affected. On the wastewater side, the city did not have a lot of good information available, particularly on elevations which are very important because the sewers are generally gravity systems. Ferber Engineering surveyed and collected attribute data on all 6800+ manholes. Effort took about a dozen people three or four months. They removed lids and took other information about elevations and pipes. For each pipe, diameter, material, inverts, depth, length of pipe are included, helping to create a very extensive database. This database operates the same way as the water database, tied with location so that City engineers can locate where each manhole is in relation to streets.

Mr. Lichtwardt then introduced John Gray, a Senior Engineer with Burns & McDonnell to discuss Hydraulic Modeling. John Gray, senior engineer with Burns/McDonald, led Hydraulic Modeling effort. Gray said that the first thing the group did was select the software package to use. City staff was involved in making the decision and reviewed the available models and packages, ultimately narrowing the selection to just a few options. The City held a workshop with representatives from three companies who highlighted the capabilities of the different software packages the City had decided to consider. Since the project is so data centric, both models are developed from and intimately tied with geo-database. Both models were calibrated using actual pressure/flow monitoring data. The group developed a water pressure monitoring system that shows where temporary water pressure monitoring gauges were installed, as well as where hydrants are located and the pressure measurements for each hydrant. This data combined with operating data from operating logs at the treatment plant allowed them to indicate exactly how the system was operating across the system and allowed them to calculate daily demands and peak hourly demands in each pressure zone to determine how peak factors vary across the system. Similarly with the wastewater model, the goal was to know how the flows vary in the different parts of the system. 12 flow meters were monitored for a couple months, and the data was combined with information from the treatment plant. The model itself is built from the geo-database. Information is both graphical and tabular. A presentation of the sewer model of the entire system was displayed, as well as a GIS graphical display that showed the level of detail that the program allows. Once the model was constructed, the group conducted analysis of the existing system, as well as an analysis of future scenarios based on land use plans, population projections, corresponding demands/loads. The group also conducted an analysis for future planning years 2015 and 2030.

Lichtwardt said that the models have been turned over to the city staff and the detail for hydraulic modeling is outlined extensively in the report. The most important information to take away from this is that the city now has the engineering tool to evaluate any question that may arise.

Olson asked that since the data comes from the land use plan, although this data adds a good guess, as the City revises those numbers based on 2010 census data, as the city goes beyond 2010 and changes the best guess, can those numbers be plugged in and still be pertinent to the database? Lichtwardt said that is correct, and the advantage for the centralized database is that everything is tied to the GIS. Olson asked for clarification that the City is not left with whatever present figures are as better information is acquired in the future. Lichtwardt said that is the big advantage of "real-time" planning, because the database can be updated as land use plans and other plans change. The whole concept is to keep the database up to date.

Lichtwardt then addressed the last tool, the computerized maintenance system. Maintenance is a very important and can be very costly part of city activities.

Lichtwardt explained that there are two types of maintenance: preventative and reactive. Preventative maintenance includes a valve exercising program and a hydrant flushing program. These kinds of maintenance programs extend the life of the various components. Reactive maintenance includes emergencies in the system such as a main break. It is important to have a system that is able to address both of those aspects.

Lichtwardt then explained the process that the City and consultants used in CMMS Selection. The group looked at hundreds of software packages on preliminary level. They narrowed it down and had several companies come make presentations. The group set up a matrix using questionnaires and interviews to determine workflows of city employees. They used this information to determine the goals for the software. Ultimately, the group selected Cityworks by Azteca Systems, Inc. Some of the benefits of Cityworks include the fact that the program utilizes centralized GIS data; there is improved efficiency for proactive & reactive maintenance; the program provides tracking of labor and material costs for maintenance; there is extensive reporting capability; the program provides valuable information for planning which leads to reduced long term maintenance costs.

Chapman asked whether the company that is providing the software is locally or nationally based, and how the City will be able to access customer support services. Lichtwardt replied that the company is national, not local, but is very responsive to customer service issues. Cityworks by Azteca is being used by many very large communities, and the consultants expect them to be around for a very long time.

Weifenbach asked what other communities are using this software. Lichtwardt said that he can find out the information and forward it to the council. Weifenbach asked how the maintenance program takes into account opportunities to improve overloaded sewers and water pressure problems. Lichtwardt said that the Hydraulic Modeling addresses those issues. Weifenbach asked whether we have identified those areas yet. Lichtwardt said yes, they have identified all projects that need to be completed by 2030, all of which are included in the report.

Ellis said that the city has been looking at implementing across all departments including the Airport and Growth Management departments.

Hadcock asked whether the system can show problem areas for private land. Lichtwardt said that assets not owned by city are not included in the modeling but will highlight problem in wholesale areas. Hadcock said that she appreciates the staff and everyone who has helped on this project because the facts are good to have when making decisions regarding infrastructure. This data will make the process more efficient, will save time and will be more cost effective.

Weifenbach asked Ellis whether the Public Works department has had an opportunity to experience the Cityworks software in a working environment. Ellis said utility maintenance crews have been using system and find it very user-friendly and have been able to do their work faster and more efficiently. Growth Management has done a test run with the permitting process and the employees were very happy with the program's capabilities. Ellis pointed out that Jim Cook from the IT Department may be able to give more detail. Parks & Recreation, Airport, Growth Management, Public Works, and other departments are excited about using this software. Weifenbach said that when we find out what other communities are using this software we will have more information about any potential problems.

Jim Cook said that three years ago, the City of St. George, Utah, did the same thing and Cook was happy to see Rapid City doing the same thing. Cook said that Cityworks worked very successfully in Utah, and when Cook left to come to Rapid City, St. George had been using the software for about three years at that point. Cook said that New York City uses this software to manage tree program including Central Park. Oklahoma City uses this software for about five different areas, including for their airport, and has been using the program for about 6 years. Software has also been put into the CIP and the IT department is negotiating purchase of it right now because Growth Management is anxious to use it on their permitting.

Lichtwardt then spoke about some of the Capital Improvement Projects. The group identified potential CIP projects based on future modeling scenarios. Project types include: improvement projects, expansion development projects, and rehabilitation projects. Once the projects were identified, the group prioritized them based on where growth was occurring, and then developed cost estimates for each one. Cost estimates are very rough at this point since they are projected to 2030. The master plan identifies every project through 2030. Information developed in the master plan can be used in the City's Utility Rate Study, and in the development of 5 year Capital Improvements Plan.

Lichtwardt explained some additional project deliverables including: water rights planning; evaluation of existing water rights conducted in phase I; water rights planning recommendations for Phase II provided as a technical memorandum. The group recommended designating a staff member to handle water rights issues.

The group also did some scanning of utility system drawings. The City's archive at the water reclamation facility and in the City/School Administration Center has approximately 35,000 drawings that have been scanned and tied to road centerlines for accessibility. Drawings are tied to the map and are more readily accessible, which should definitely improve efficiency for engineering staff. City staff continues to scan and archive drawings.

Finally, Lichtwardt introduced Ted Kelly, a Senior Analyst for Burns & McDonnell, to speak about the Policy and Ordinance Review portion of the project. Kelly said they reviewed Rapid City's policies and ordinances – specifically titles 12, 13 and 16. The consultants reviewed information prepared by City staff, and also reviewed information collected by other communities dealing with similar issues. The consultants recommended that the city re-evaluate water and sewer rate structure. Kelly feels it is important to consider implementing specific language regarding development density that would help in planning and development and should be addressed. Kelly recommended that the City evaluate implementing several policies on a case-by-case basis to ensure they meet with overall City goals and master plan goals. He suggested the City consider offering rebates for low-flow toilets, high-efficiency washing machines or irrigation controllers for lawn-watering, and look at time-of-day or time-of-year irrigation restrictions.

Weifenbach asked whether the master plan contains suggestions or whether this is raw data that the City will need to use to formulate their own suggestions. Kelly said that the report contains suggestions regarding these key aspects.

Lichtwardt then presented recommendations for distribution of information. Lichtwardt said it is important for City staff and Council to determine to whom the information will be available. He said it is a tough issue and with more recent security issues, the City's vulnerability when making information public must be addressed. There is always a balance between security and right-to-know and in that light, the consultants have made recommendations regarding the master plan, and the City staff will be making further recommendations. Lichtwardt commends city staff as the project has been very substantial and many people have been involved in its success. Responses were quick and timely and communication with city staff was excellent; the project was completed on time and on budget.

Hadcock asked whether Lichtwardt had suggestions from other cities' master plans. Lichtwardt said he can find out but typically groups do not share models unless there is a need to know. He said that sharing this information is generally only on a need-to-know basis, and he thinks this is a good approach moving forward. Lichtwardt said that Dan Coon is working on different agreements that people can sign as they have access to the information that will keep the information from being shared with other individuals or groups. Hadcock said that it is important for the public to know why information would be distributed or not.

Olson asked Lichtwardt for an example of what he means when he is talking about sensitive information. Lichtwardt said the report is essentially a map of the City's infrastructure so it should not be placed on the website for security concerns. Olson asked for clarification as to whether the potential for damage is a threat. Lichtwardt said it is important to keep the info secure to protect against water quality issues or terrorist threats.

Coon added that it is not just terrorists that could do damage to infrastructure but could also be vandalized by locals who could be looking to contaminate the water system. He said that the balance between need-to-know and keeping information secure is being taken into consideration and recommendations will be made at a later point in time.

Coon then presented a flow chart that showed three steps to the process of implementing these tools: Step 1-Development of Tools, Step 2-Learning the Tools, and Step 3-Efficient Use of Tools. Coon feels that the City has essentially taken Step 1 – development of tools. The City has had some of these tools for several months already. Experience is important in learning to use the systems and modeling and will take some time for the city to take full advantage of the systems. Coon asked the Council members for some patience as far as allowing employees of the Public Works department to find answers to any questions the Council may have.

LaCroix said he served on the Utility Rate Selection Committee, and asked how well the software is working for the front-line maintenance staff to determine in the long run how the City should spend money. LaCroix asked whether the Utility Rate Study and the software program coincide together smoothly. Coon said that information was developed as part of the master plan, mainly on capital improvements, and that will be one component of Utility Rate Study. This information has been provided to the consultant on that project as well.

Olson said that prioritizing is difficult and asked whether a criterion has been developed to help the City prioritize projects. Coon said that specific criteria have not been developed. The model itself can only determine potential expansion and improvement projects. It is hard to predict growth but if projections are accurate, the City has a plan for water structure. Lichtwardt said that trigger points for different projects have been identified which fall along those lines. Coon said that for improvement types of projects, the plan has prioritized projects in order of actual construction needs. For example, if one component must be updated before a second component can be updated, the plan has taken those types of situations into account when prioritizing projects.

Robert Ellis wanted to follow up on the priority listing developed in plan. The department laid out a road map for growth in all directions of the city. Whatever decision the City Council makes as far as what direction the growth needs to go, the plan has outlined the infrastructure that needs to go in place.

Weifenbach asked if the information will be available to Council members for review. Coon said that 2 hard copies of the master plan are in the Caucus Room and individual copies may be requested by the Council members. Weifenbach clarified that his concern was policies and procedures rather than the specific data.

LaCroix asked how the computerized maintenance management system works, for example whether it alerts City staff with a work order when maintenance is needed. Coon said that is exactly one of the ways it works. It is labor-intensive to set up all the standing work orders but once they are set up, maintenance can be scheduled well ahead of time. When maintenance employees come back, costs and equipment can be updated in the system. On reactive-type maintenance, for example when a water main breaks, the crew can go out and enter the data the next day to store information in central database. Coon emphasized that the crew took a lot of time and effort to develop the system over ten months and work is still in progress to develop the information.

In response to another question from LaCroix, Coon mentioned that not all City drawings are scanned – approximately 35% of all drawings are scanned at this point. In the future, maintenance employees may be able to use wireless Internet access to connect to the City server and access the geo-databases from the field.

Hadcock said that she is excited about infrastructure and thinks that the database makes Council members' jobs easier in that they can make more informed decisions with access to the information.

Weifenbach asked whether the software is in place currently. Coon said that the main components have been in place for 10 months and are being updated, and some models have just been received and are in the implementation process. Database allows for future data in a way similar to the way data can be added to an Excel spreadsheet. Weifenbach asked if the consulting group has seen the work order system in place in other communities. Coon said no, but he thought that may be beneficial. Some members may attend the Cityworks conference in Utah to gather that information. Weifenbach asked Coon how he saw the Council fitting into the plan. Coon said they would look to the Council for policy and direction.

Olson asked whether Coon felt additional training would be necessary for front line employees. Coon said that they have been providing training to employees as they are implementing elements of the programs. Roy has received some modeling training. Additional training will likely be required but there are a lot of options as far as training here, going online, or traveling to training sites. Olson said that Western Dakota VoTech is providing training for young people who are seeking jobs, and asked whether additional employees would be needed. Ellis said he did not feel additional employees were needed; Roy Cork is the "resident expert" on Cityworks and has already received training for the software.

Ellis said that when a developer comes in with plans for a property, some of the first questions are whether there is sewer capacity, or whether sewer is available. The information will be readily available for engineers to answer these questions.

He also said that the City's intent is not to take away livelihood from local engineering firms but just to make more information available; the City will not be doing water and sewer modeling for new developments. Instead, the City is maintaining and warehousing this information for those engineering firms to use and make decisions.

Chapman asked where the money came from to purchase all this expertise and compile the information. Coon said the overall cost is a little over \$1.8 million. Just short of \$800,000 came from Federal Stag grant that is administered by the EPA and South Dakota Department of Environment and Natural Resources. The other remaining \$1 million balance was split equally between water and sewer enterprise funds. Chapman said he knew that information and wanted that information to be in the public domain. Chapman said that from time to time, trips to Washington yield a huge return on investment that will impact the community for years to come. Chapman's understanding of leadership is that leaders do things that impact the community after they are gone, and this project is something that this Council will leave for the City of Rapid City for years to come. Chapman joined the other Council members in thanking the presenters for putting this information together and giving the Council this information to think about. Chapman said that the City also needs to consider emergency management and working with the County as well. Chapman said that more dollars need to be allocated toward these sorts of resources from the community standpoint.

As there was no further information to bring before the Council, the meeting adjourned at 1:46 pm.