

AGENDA ITEM 2-a

MINUTES OF A REGULAR MEETING OF THE UTILITIES COMMISSION, CITY OF NEW SMYRNA BEACH, FLORIDA, HELD MONDAY, FEBRUARY 25, 2008, AT 6:00 P.M., AT 200 CANAL STREET, NEW SMYRNA BEACH, FLORIDA

Chairman Allen proceeded with an invocation and the Pledge of Allegiance immediately following.

Chairman Allen then requested for a roll call to be taken with all of the Commissioners in attendance as follows:

Commissioner William E. Hall
Commissioner William H. Reynolds
Commissioner Oscar Zeller
Chairman Walter Allen III
Commissioner Jeanne K. Diesen

Others in attendance were as follows: R. Rodi, General Manager/ CEO; L. Klinkenberg, Director of Finance; R. Mitchum, Director of Electric Operations; T. Beyrle, Director of System Operations & Generation; D. Hoover, Director of Water/ Wastewater; J. White, Director of Engineering; R. Lemoine, Director of I.T.; P. Perez, Director of H.R.; E. Mahle, Public Information Manager; B. Sylvia, Lift Station Maintenance/Superintendent; C. Mckenzie, Senior Chemist; J. O'Brien, Materials Manager; D. Wood, Customer Service Manager; J. Santrock, Senior Customer Service Supervisor; D. Zorge, Customer Service Supervisor; K. Beck-Pearce, General Office Clerk; J. Lutz, Receptionist/C.S.; D. Simmons, Executive Asst./Recording Secretary; and a few other U.C. employees; B. Preston, Interim U.C. Legal Counsel; City Commissioner L. Plaskett (came in at very end of mtg.); Dr. Mark Soskin, UCF Professor of Economics; John Kersten, Black & Veatch VP/Reg. Mgr; Daniel Raymond (Business Mgr./IBEW); Robert Burns, Reporter for THE OBSERVER; Ken Taylor, Bob Tolley, Mike McCormick, members of the public.

(1) Agenda Changes, Additions and Deletions:

Chairman Allen then asked if there were any changes, additions or deletions to the agenda?

Mr. Rodi stated no.

(2) Approval of Consent Items:

Chairman Allen then stated item two is approval of consent items.

Commissioner Reynolds stated he had no comments on the consent items and then made a motion to approve the consent items 2-a. Minutes of Joint Workshop Between CC and UC Held 1-24-08, and 2-b. Minutes of Regular UC Meeting Held 1-28-08, approve both as submitted; 2-c. Bid No. 06-08 – Rehabilitation of South Clarifier Tank, award purchase order no. PON0007715 in the amount of \$67,000.00 to Viktor Construction, the low responsive and responsible bidders; 2-d. Developer's Agreement and Addendum –Al's TV (H&W Enterprise, Inc., approve as submitted and authorized GM/CEO to execute documents; 2-e. Triennial Report, approve and authorize Black & Veatch to prepare this report for the period of October 1, 2004 through September 30, 2007, for a lump sum cost of \$20,900, and authorize the General Manager/CEO to execute all documents

(2) Approval of Consent Items (cont.):

associated with the matter; 2-f. Interest on Customer Deposits, approve the interest rate of 3.75% to be computed on customers' deposits during 2008, to be effective with the first billing cycle of March 2008; 2-g. Supplemental Developer's Agreement and Addendum – The Palms Phase I / Hampton Village (75 residential units) and 2-h. Supplemental Developer's Agreement and Addendum – The Palms Phase I / Hampton Village (204 condominium units), approve both as submitted and authorize GM/CEO to execute documents. Commissioner Hall seconded the motion and it passed unanimously on a roll call vote.

(3) Public Participation:

Chairman Allen then opened the floor for public participation.

There being no public participation at this time, Chairman Allen closed public participation.

(4) General Manager's Report

Chairman Allen then stated the next item is the General Manager's Report.

Mr. Rodi stated we'll start with Ms. Klinkenberg's financial report and I think she has a couple of new additions to fill us in on.

(4-a) Financial Status December 2007 and January 2008:

Ms. Klinkenberg stated in an ongoing effort to provide you with more timely information, we've decided to issue the financials only one month behind. That's why you're receiving December's and January's this month. In order to accomplish that with the agenda deadlines, you're not receiving the financial statistical highlights in your packet (in the General Manager's Report), it's going to be attached to your financials with your packet. It will be delivered at the same time so you will still have it before the meetings.

Ms. Klinkenberg stated also in January's financial statements we included the notes to the financials because we thought that might help to interpret some of the numbers and make it a little easier.

Ms. Klinkenberg stated for the month ending January 2008, our change in net assets is about \$2.9 million for the combined system of which \$2.5 of that was contributed capital. And our forecast reports reflect an unfavorable variance of \$135,000. This is pretty normal for this time of year, it tends to catch up as the year goes on. She then asked if there were any questions about the financials.

Commissioner Reynolds confirmed the January financial statements were included in the agenda package.

Ms. Klinkenberg then stated she wanted to update the Commission on ongoing projects, the Great Plains and the Customer Service projects. The last couple of weeks we've had our consultants on site from both companies and we've been through some intensive training for the core team. We had very good results from the Enquesta, we were very happy. We actually saw our data produced

(4-a) Financial Status December 2007 and January 2008 (cont.):

on the screen in a bill format and it matched our system, which is a really good sign. It seems very user friendly and we're still scheduled for a go live date of June 1st, which will actually be June 3rd to everybody else. Great Plains is moving along smoothly now, we're just about ready to implement the fixed asset module and moving ahead with the project module. And then the bank reconciliation which will get us all the measures we're wanting to get, like a statement of cash flows. So all of that will be coming in the near future.

Ms. Klinkenberg stated another update on the notes receivable, the Johnson Group paid off their loan, the funds, I track that regularly. We're still earning more interest in our bank account than we would if we paid down the debt. We're earning 4.09% and we're paying 3.39%. So at this point we'll leave it there and I will just keep monitoring it.

(4) General Manager's Report (cont.):

Mr. Rodi then asked if the Commission was ready to hear about the Progress Energy background?

Chairman Allen confirmed this was item 4-b. and stated yes, we are.

Mr. Rodi stated he would join Mr. Beyrle at the table.

(4-b) Proposed Progress Energy Electric Capacity and Energy Contract for 2009-2013 – Status Report and Information:

Mr. Rodi stated just to give a little bit of background here, Mr. Beyrle has been working on this particular contract for nearly a year now. The kind of information that you'll see in here is meant to be for tonight educational, there's no action required at this point. What we're trying to do is give time for you to understand the information, and then we'll bring the contract forward, and we'll have Mr. Preston review it then. So at the next meeting we'll be asking for, obviously we hope, approval. I think part of what you're seeing in the papers now and reading are a lot of different kinds of issues that are surfacing with regards to renewable energy, what's available in Florida, and a lot of concern from the standpoint of the direction that we're going in. So the engagement of people with different perspectives is pretty intense at the moment. I think with that is some background, I'll turn this over to Mr. Beyrle and then I'll make some comments as we move through this.

Mr. Beyrle stated what you'll see in the presentation tonight is quite a bit of numbers. As far as the actual terms of the contract, it's a fairly straight forward contract. It's a firm capacity and energy contract between ourselves and Progress Energy. As Mr. Rodi said it's undergoing legal review right now in the draft stage and it's also undergoing review by the various business units at Progress Energy. So we haven't received a final, final version but we have it long enough that we've reviewed all the terms. We're satisfied with the terms and the requirements of how firm it is and the requirements on our part and on their part. He reiterated what you'll see tonight are quite a few numbers and feel free if there's any questions, just stop and ask me if they don't make sense to you.

Mr. Beyrle stated our existing contract with Progress Energy was originally signed back in 1992. It had various levels of capacity, it's currently 15 MW, it was as high as 30 MW but right now it's at

(4-b) Proposed Progress Energy Electric Capacity and Energy Contract for 2009-2013 – Status Report and Information (cont.):

15 MW. It was a bundled contract which means they offered us capacity, energy, transmission, ancillary services; everything that goes with it. The way contracts are currently written, they can't offer all those things in one contract and as of December 31, 2008, that contract is being terminated.

Chairman Allen stated question on that, are you able to purchase those through another means.

Mr. Beyrle stated actually the spinning reserves and the regulation service, although they were offered under that contract they consider them separate so we won't have to change that, we can continue on with our existing contracts on that.

Mr. Rodi interjected the ancillary service.

Mr. Beyrle stated the proposed contract we're looking at is a five year contract from January 1, 2009, to the end of 2013. It will have 25 MW of capacity and energy. It will be for capacity and energy only, the transmission portion we will have to go out and secure separately. One of the reason we did a five year contract is in order to secure firm transmission, we have roll over rights since we have firm transmission now. The new rules say if we have firm now they must offer us firm transmission going forward but it has to be for a term of at least five years. And as we have all heard the last few years, transmission is the big issue now in Florida. If you can get firm transmission in that's worth quite a bit.

Mr. Rodi stated if you will recall in the past, 2006 in particular, there were transmission issues with regard to our TECO contract to the point where they could not deliver the energy and that was quite an issue. The problems in Central Florida are still there, they're not planning to have them resolved now until probably 2011, somewhere in there. So having the firm transmission is critical for the functionality of this contract.

Mr. Beyrle stated for the existing contract, here are some cost breakdowns. We have a capacity payment of \$9,530 per MW per month and transmission \$1,150 per MW per month. We pay our fuel cost based on Progress Energy's system average energy cost and we pay a non-fuel adder of \$6.68 (per MWh). The next costs are what it's been running the last four years, all-in costs from Progress Energy (FY2004 - \$52.93/MWh, FY2005 - \$62.56/MWh, FY2006 - \$66.00/MWh, FY2007 - \$66.89/MWh), when you factor in all the kilowatt hours bought and the transmission and the capacity costs each month.

Commissioner Hall asked if these were averages?

Mr. Beyrle answered these are yearly totals.

Commissioner Hall stated okay, but I'm talking about the capacity, the transmission, the fuel costs, and the non-fuel costs.

Mr. Beyrle stated those are fixed costs. The only variable costs is the fuel cost. He then went on to the next slide and stated under the proposed contract we have capacity payments from \$12,000 per MW per month up to \$13,000 over the term of the contract. Transmission, as I said, it will be under

(4-b) Proposed Progress Energy Electric Capacity and Energy Contract for 2009-2013 – Status Report and Information (cont.):

whatever their filed tariff rate is, which is currently \$1,302 per MW per month. Our energy cost (fuel cost) will still be based on their system average and our non-fuel cost has gone down around a dollar per MWh and I have a comparison of the two (next slide). He stated you can see our capacity cost is going up. Transmission, they've just raised their transmission rates this year and they're now being tied to a formula so they won't have a fixed transmission that we can bank on from year to year but this is about the prevailing rate for transmission from the transmission providers in Florida (proposed \$1,302 per MW per month). He stated system average is the same for fuel cost.

Mr. Rodi stated I wanted to make a comment here about transmission. All through this recent period, over the last year in particular, the FRCC has moved from a coordinating body to an enforcement body and part of what's occurring is that with regard to transmission upgrades. If we were not able to secure our right of transmission here, all the issue with regard to an additional 25 MW might fall into the new cost sharing formula. Those formulas are very complex to the point where we might have had to participate in the costs of upgrading to the system because the load would have been considered as new load as opposed to the continuation of our rights under a previous contract. So there are a lot of advantages for us to move forward just from what's sitting out there yet. I thought I might bring that to your attention.

Mr. Beyrle stated I just wanted to give you some of the assumptions and results of the analysis that I did in determining the output of this contract. Looking out during that five year term based on load growth and need for resources, we expect that we will use this resource over 90% of the time. In other words, over 90% of the available MWh that we could take, we will be taking. Now that may go down based on opportunities that we get in the off-peak market or if there's a very mild month and we can go out and purchase on the market at a lower price we will do that. That's something we do on a continuing basis now under the current contract. We know, approximately, what our cost of energy is going to be for February from Progress Energy and if we can go out and buy a block of off-peak energy for what we know is going to be less than that, we'll go do it and then we'll back off on the existing contract. What it does, your all-in cost goes up a little bit for this resource because you're paying more fixed, but the overall costs of our energy purchase goes down.

Mr. Beyrle stated these are the system average energy costs given to us by Progress Energy. You'll notice a note down here, they have a clause in all their contracts now, as do most people, that everything is contingent upon environmental law changes. Just as we don't know what's coming down the pipe, neither do they, so in the contract as well they have the ability to put in billing for certain environmental law changes and these prices are based on the law as it stands now.

Mr. Beyrle went to the next slide and stated this we saw a couple of slides ago, the current all-in costs for Progress Energy in the \$66.00/MWh range. Then the next is for that resource what we forecast for the all-in costs being going forward (in the \$77.00/MWh range).

Mr. Rodi stated the only other comment is there are certain assumptions that Mr. Beyrle has made with this contract and obviously I have provided in the past some historical information that is relatively current on what's happened with the cost of natural gas, fuel oil, and all that. Of course, we're reading now of oil prices going over \$100 barrel so there's some concern about what may happen with regard to not only pipeline capacity for natural gas, and a good deal of Florida's

(4-b) Proposed Progress Energy Electric Capacity and Energy Contract for 2009-2013 – Status Report and Information (cont.):

generation is natural gas-fired, as well as the next stage which is oil. Coupled with that is again the dialogue that's occurring about some type of general, I'll call it a tax, for the use of fossil fuels or fuels that contribute to greenhouse gases. So the cap and trade system is intended to mitigate that from a standpoint of individuals trading from a more efficient plant to a less with regard to carbon dioxide. But there's still some fundamental issues with regard to increases based upon the nature of the fuel and part of the philosophy behind that is to drive fossil fuel costs up to the point where a number of renewables are then competitive. So that's just another statement again about some of the activity that's occurring and it's caught up in this particular contract as are the rest of them now with making escape clauses for those kind of contingency costs if they come.

Mr. Beyrle stated and this is just what I was alluding to, this is our current all-in costs from the current contract and this is the forecasted all-in cost from the new contract.

Commissioner Reynolds asked why is there a dip on the next to last year.

Commissioner Diesen interjected your out year.

Commissioner Reynolds stated we go from \$77.75 to \$76.73.

Mr. Beyrle stated Progress Energy's fuel cost is projected to decrease slightly from 2011 to 2012.

Commissioner Reynolds stated okay.

Mr. Beyrle stated based on new generation they have coming on line, be it nuclear, that's just their long range fuel forecast.

Mr. Rodi stated in this market that's rather interesting.

Commissioner Reynolds added that's unusual.

Mr. Beyrle stated it's also four years away. He stated this next slide is an analysis I did on the fiscal year 2009 all-in fuel and purchased power costs. These are our historical numbers, the last fiscal year (FY2007) for the entire year we paid \$62.38 per MWh for all of our purchases. Our nuclear units, our generation, transmission, fixed costs, bond payments on the generation, and based on Progress's number with their fuel numbers in this contract, we show an all-in cost of \$68.13 per MWh. One of the things you'll see in a couple of the assumptions, on the St. Lucie nuclear plant that we have an entitlement in, our portion of the fuel costs went up dramatically this past fiscal year. It went from being a \$10 or \$12 resource up to a \$24 resource, so that had a large impact on our all-in cost on our fuel and purchased power.

Mr. Rodi stated again because of all of the increased interest in nuclear, there have been some rather unusual changes for yellow cake for example, for nuclear fuel coming forward, so this is already starting to show up because of the expectation. For quite a few years the cost of nuclear fuel was down over what the presumed market was for it and now there's a resurgence in it.

(4-b) Proposed Progress Energy Electric Capacity and Energy Contract for 2009-2013 – Status Report and Information (cont.):

Mr. Beyrle stated with this \$68.13 number, keeping that in mind, this is a slide provided by the FMPA, the Florida Municipal Power Agency. With their All Requirements project, wholesale cost, for the last 12 month average wholesale cost comparison, and they provide these numbers from the various investor-owned utilities and rural cooperatives along with their number. So you see the wholesale costs all around the state are escalating quite a bit.

Mr. Beyrle went to the next slide and stated as Mr. Rodi said earlier, we're not bringing anything tonight for approval, this is information. This is getting the numbers out there for you to see them with the plan being to have the reviewed contract, reviewed by us as well as legal staff, to you for the March Commission meeting. We would request approval at that time, after which we would go to the City for their two approvals since it's a five year term, it will require two hearings (readings) from the City as well. We have our transmission approved and ready to go, our firm transmission for the entire term, but we can't execute the request until we have a signed contract, otherwise we would have to pay for the transmission.

Mr. Rodi stated on Mr. Beyrle's assumptions the cost of natural gas was listed there like \$7.50 per million BTU's and if you look at about the last year it's been bouncing between \$7 and \$8 something. We really don't know where that's going to go but obviously, what I had asked Mr. Beyrle to do, I like others, would have the question with this new contract and we rolled it into what it is we're buying now and what we're seeing out there now, what would it do to our over all all-in costs. He had provided that but he made those assumptions so I just wanted to point that out. This document, we will provide a copy to you so that you can reflect on it afterwards. On several of the presentations here tonight we were working on them to the last minute but more importantly we were trying to deliver the message and then you can follow up with questions that you have even afterwards. He then asked if there were any other questions in regards to this presentation.

Commissioner Reynolds stated I have a question, to put this in terms that the general public can understand, is it possible for us to take an average electric bill from a customer and pro-rate it over those five years of the contract to see what that person is going to have to pay. Can we do some kind of correlation there?

Mr. Rodi stated let me take a swipe at that, part of what this includes are billing costs and included is our fuel adjustment. Currently we are recovering for fuel expenses that we paid in 2006 and 2007 that well exceeded the allowed fuel adjustment that we had in our rate base. Part of what we have to analyze yet is assuming these numbers are accurate, after we pay down our remaining unrecovered fuel costs, which I think is right around \$1.7 million the last I'm recalling, then we're going to look at what this forecasted level might be. So that maybe in the first or second year there might not be any change, so part of what we have to do is we're recovering more now in order to pay down what we've already paid out, and then after we get past that, then the question becomes what level do we set that at with regard to this contract. We haven't done that calculation yet, Mr. Beyrle started to take a run at that and I had suggested that we really needed to wait until we saw the final contract from Progress Energy and then make another run at that.

Commissioner Reynolds stated well there certainly is a motivation I would suspect because those are fairly significant increases you know over time, that it might bring on some alternative energy

(4-b) Proposed Progress Energy Electric Capacity and Energy Contract for 2009-2013 – Status Report and Information (cont.):

initiatives that can go hand in hand with those years that we see the escalation of the price.

Mr. Rodi stated we would hope alternative energy costs would be less but I don't think so.

Chairman Allen interjected I doubt it and asked if there were any other questions. There being no further questions, he thanked Mr. Beyrle for the information and stated it's something for us to chew on, think about, and prepare for March.

(4-c) Solar Survey Results:

Ms. Mahle then addressed the Commission and stated you all may recall in December (2007) the bill insert was the solar survey that we did in conjunction with the University of Central Florida's Economics Department. Tonight we have Dr. Mark Soskin from UCF here with us to explain some of the results to us. I want to say thank you to him and his crew for helping and working with us on this project. It came out in December but it started in May and we refined the language, worked out the layout, and played with the format for months and months. What we ended up with and what all the customers saw in their December utility bill was a very sharp, a very well researched, and well written survey, and that was reflected in the response rate we got that Dr. Soskin will talk a little bit about. So without anything else, I'll turn it over to him.

Dr. Soskin addressed the Commission and stated thank you and to all the people, and especially to the Commission for participating and okaying this. We had approached some other cities and utilities before and the subject is often broader than some of the minds that sometimes get involved with this subject. I want to tell you that all the costs used for our grant from the Boardman Foundation was strictly for printing, copying, designing, scanning, and all the rest was pro bono work plus the many consultative helpful suggestions that we got to make sure this was adapted in particular to New Smyrna Beach and its outside customer base. As you know, as was just listening to, these are interesting times and renewables are on the table among all utilities. However the non-economic kinds of ways of dealing with these things, engineers that we often talk to, including our own UCF, FSCC solar energy people, they like to think that everything can be solved by engineering. Anybody who has ever had one of these systems they installed in their home realizes that you have the latest of 18th century technology involved, namely the construction industry. In installation, you have distribution and so forth and that's clearly a majority of the cost and so all of these great engineering break throughs everyone is expecting is still only going to affect a portion of that cost. I'll talk about costs at the end as well, opportunities for you folks to be at the cutting edge of this particular development and put you on, I guess, the map globally besides this state-of-the-art survey. No one has done a survey like this again in the world and it is making use of the most state-of-the-art and trial and error types of standing on the shoulders of others. In addition these systems are modular so the opportunity to upgrade, swap out, expand them are there.

Dr. Soskin stated the awareness of all this, we've seen this going on in many parts of Europe - Germany, California at the state level, and at the city level such as Austin, Texas, with varied amounts of success. Most of them are very good at ignoring all economics which results in the maximum amount of inequity or translating from the economics unfairness as well as inefficiency. Since we're really talking about making the world poorer in order to deal with this, our income will

(4-c) Solar Survey Results (cont.):

fall, our buying power will fall, regardless of what we do in order to do this, so we want it to fall the least amount. And in addition many research studies have been done but one of the things, Lakeland, Florida, for instance, had pursued solar hot water and they discovered the fantastic result that if people can actually save money by going to solar hot water, people stand in line to get the next one. That's of no information value at all to anyone. Many of the other solar kinds of monies coming from the Federal and State government have also proved that point which is also of no use. So the basic idea is there is a cost gap and how do we bridge that most efficiently, most effectively, most rapidly, and also help utilities out in the process.

Dr. Soskin stated the examples, since you're also involved with water, and I was also a consultant for many years with St. Johns Water Management District, is that places like JEA utilities started off thinking that reclaimed water was a bad rather than a good, and discovered that people actually got higher status and was willing to pay more in developments that had reclaimed water. Similar kinds of things we're now seeing with various solar opportunities. We also found in these studies that people are willing to pay more for solar than if asked about just some generic renewable, so there is differential preferences for these.

Dr. Soskin stated utility and research surveys abound, many of these surveys have been conducted all around the country and around the world. Both by utility companies usually not with the greatest amount of survey technique and economics and theory, and research and studies have also been evolving. Just to kind of give you an example of how bad these surveys can be or misleading to utilities, is that basically there are huge biases out there. FPL for instance reports less than 1/2% participating in their green pricing scheme. Well, the upward bias from these surveys has been things not like 10%, not 20%, but things like 800%. Now you're going to get this with any marketing survey, for instance you come out with a new boat and you ask would you be willing to buy a boat with these specs and so on. People will say oh yeah, the boat looks great, and they say they will and they won't actually buy it. But we're talking about order of magnitude much larger in terms of the bias.

Dr. Soskin stated the basic idea, especially when you're talking about the opportunity, choices between green pricing and solar hot water and PV panels on the roof is that it's an impure good, I don't want to use that term here, but it's a private and public good aspect. So if you buy a hamburger you get all the benefits and digestion, calories, fats and so on, no one else gets any of the benefits of down sides. Whereas many public goods it's strictly the kind of thing that the whole society benefits and there's no way to exclude people from the benefits, like national defense and whatever, but in the case of this it's both private and public. That is you get the power to provide for your own electric needs, at the same time you also get the public good aspects. Now of course the reason why public good even exists in these situations is free rider problems that we call is let others do it, whether it's like cancer cures or whatever, I can't make a difference myself, everyone else is doing it, then why should I pay any way. So until recently however these renewable options were not available so this became kind of a moot point and now with green pricing and net metering and with uniform licensing of engineers, installers and so on, and various incentive programs, this is a very real choice, an option people have available.

Dr. Soskin stated what the survey also went after was various demographics as well as environmental attitudes and actions. The basic idea is if you pursue this, you need to not just know

(4-c) Solar Survey Results (cont.):

what the average is, but what are the indicators or good predictors. So if I know your particular attitudes and actions environmentally and something about your income and so on, I can figure out whether you're a good target to even provide a likely person who's going to participate in one of these programs. The same way as people flock around someone who drives in with a Mercedes into a car dealership and leaves out the one with the backfire and some young, not well dressed individual; so the standard kind of marketing approach. He stated one of the biases, is the hypothetical bias that's going to occur on surveys of this type, especially if it's confidential. Some utilities have attempted the opposite, and I'm pretty sure you wouldn't have wanted to do this, they basically say if enough people sign up then you will suddenly be assessed on your next bill because we're going forward with this. But the alternative is to provide the facts, the information, the contacts, the alternatives so people can take this seriously when they're making the decisions. This survey made that kind of effort. Warm glow is also one of the sources of biases as well but we were trying to avoid without having interviewers by doing it as a mail survey.

Dr. Soskin stated green pricing here as opposed to home generation is something that is a bit older, it's been used nationally. I guess Minneapolis is the highest rate of participation in green pricing right now in the U.S., something like 20%, which is almost everyone's goal if they could get there. But home solar generation is a very different animal because you're talking about major commitment of time, of cost, and changes in your life style as well. So this is not something you sign up for, for a few months and drop, the way green pricing could be.

Dr. Soskin stated survey design, it's basically a very complicated design that we were afforded by the opportunity of being able to send out and actually get to residential customers over 22,000 surveys in their hands after eliminating the business and I guess streetlight customers and so on. So that allowed us, with the response rate, to be able to divvy it up into 16 randomly assigned form versions. The basic idea here is that earlier surveys, in fact even ones that I've conducted, try less effective and more biased approaches. Where you'd say what's the most you would be willing to pay and of course most people know that's not going to provide you with really accurate answers. The alternative is to give people a menu or to say well would you be willing to pay \$400, if not \$400 how about half that, yes to \$200, well how about \$300; so a bidding process. But in real markets people face a given price, so we provided four different prices for each of the 16 forms. The 16 forms were solar hot water systems, roof top PV panels, and we had a smaller system and a larger system, one that would provide about 1/3 of your electric needs and one maybe about 2/3, and then green pricing, so that made the 16 different forms. We provided them with various information in the front end of the backside of the survey, and the information was to say hey, these are your other options. We're not presenting them with the other options but these would be alternatives, including for each one, of course, conservation. Which is not just a simple thing, as any of these are not simple, because there's always very cheap ways of conserving and then more and more expensive ways, including changing your life style.

Dr. Soskin stated and then we followed that up immediately with the following set of two questions. If you said no to the first question then you would skip on, if you said yes, then we have kind of a post correction. This is the latest attempt to really correct for the rest of any bias that would occur otherwise – how sure are you. And the nice thing about with utilities is there have been attempts to do this and they've actually seen how many people have signed up, so they actually can figure out what the bias is. They found out that people say seven or more, on a scale of one to ten, those tend

(4-c) Solar Survey Results (cont.):

to yield fairly reliable percentages of actual participation. He stated you notice in the top question we also explicitly tell them that this will provide you with how many dollars less each year to spend and everything else, so they would be making that particular decision.

Dr. Soskin stated the response rate, as Ms. Mahle had mentioned, we got 3,130 responses. Fairly high for a rate and I guess maybe even a little higher than your last survey that you conducted. Also a very high rate in terms of the individual item, so even I guess the highest non-response question was income, and even then 89% responded to it. Most of the rest were like 95%, 97%, 98% response. The accuracy of the response of course is another kind of question and that's one we wanted to make sure that everyone took everything as seriously as possible, we pre-tested and pre-tested, and focus grouped. He added thanks for making use of some of your own customers at some of these sessions in previous months. Also, I guess about the one area that we're still working on, and something that's pretty hard to avoid, is the information overload of people trying to make decisions.

Dr. Soskin stated and finally before we get the actual outcomes, the responses were then matched against census data because what's going to happen. You've probably seen some of these things whenever Stetson conducts any kind of survey, doesn't matter what they're asking about, crime exceeds the sum of everything else because the average age of the respondent is like 85 years old or whatever and they have seven locks on their door; so it's a very skewed kind of sample. And so we matched these things up and also tried out with what we call weights, to re-weight things back to what the known population is. And fortunately, many of these things didn't even require re-weighting, we got a fairly representative sample. The only ones we got a lot higher, in the way of college degrees, was actually fortunate because they're going to be more likely potential clients for these plans, and it's hard to get the younger people as well. Willingness to participate, I mentioned that aspect as well, over 7%. As you can see from the first graph, the willingness to participate in the green pricing, the 7% plus was like 13%. Whereas if you just take 5 or more as their assuredness, you get higher numbers, so you can imagine the people that had just said yes, you would get much larger numbers and that's very deceptive, biased results as some of those other surveys got. Between the three different modes of participating, solar hot water, roof top, and green pricing, we have the breakdowns there. It does appear a bit stronger support for solar hot water than others, we're looking at the purple ones, the 7% plus, but surprisingly high for the roof top PV.

Dr. Soskin stated if we look at some of the demographics first, the high income, the college grads, seemed most likely to participate. Other demographics that were looked at including age, did not show any patterns or any differences between these. So if you look at these under \$35,000 household income, and we asked with household income to include all sources of income, dividends, social security, and whatever, in \$35,000 to \$70,000 you see the clearer patterns. Green pricing seems even more definite, that the over \$70,000 are more willing to have a surcharge to their bill. The solar hot water seems to break more after the low income and something in between for the roof top PV. But definitely income looks like an indicator, predictor as one would expect, and is always found in these issues. As far as college grads versus non-college grads, that really has a definite indication for the solar hot water and for the green pricing, much higher, 2.5% higher participation rates in those. And then for the environmental aspects, the attitudinal and the actions that we asked about were such, really about over 60% agreed with the statement we must cut

(4-c) Solar Survey Results (cont.):

greenhouse gas emissions, and about 85% that we must do something about our foreign oil dependence. Those are also good indicators, in fact all the environmental questions turned out to be pretty decent predictors as well. Here we have environmental friendly products, even energy efficient light bulbs turned out to be a decent predictor, buying hybrid cars, bragging about saving from conservation, and so forth; so that's just a graph of those percentages.

Dr. Soskin stated environmental attitudes, just talking about there, if we look at this kind of three dimensional graph, you can kind of figure it out. Basically what I put on the first two rows of boxes, if you go backward, are when they didn't check a box and then if they did check that particular box as agreeing with the statement. So if you can compare the pink ones in the back with the second row, the back row is cutting greenhouse gas, agreeing with that versus not. You see major differences in their willingness to participate in the programs, you can see those in the front of solar hot water, roof top PV, and green pricing consistently. For the foreign oil statement, you see even a stronger difference, at least for the roof top PV and the green pricing. And even for any of the other kinds of questions such as once again putting the front three rows of not checking the box and then going back for the ones behind. You see being a member of an environmental group versus the third row of not being a member or considering themselves environmentalists compared with not, you see these also being pretty strong predictors of that. And finally for the bulbs and bragging about the savings from conservation, some patterns there.

Dr. Soskin stated the last two slides, what's all this about in terms of, first off this survey provides you with some information you couldn't get from the census. In particular, this survey added some things not a matter of now we know who to target and how much they'll participate, that's not good enough in terms of your long range outlook because there are many opportunities there that you can precede upon if you want to go in terms of getting a handle on some of reducing that cost differential. And so each of these as some of the things we asked about, for instance whether they plan to stay in their current residence, whether they're going to be less likely to invest in that residence perhaps if they don't plan to stay in it. We also asked specifically, in the second to the bottom one, how they had spent on home improvements, if they're individuals who have devoted certain amounts to home improvement as we see a majority of them had spent that. Then other kinds of investments such as for solar might also be more likely for them. How old the air conditioning is, if you just bought a new air conditioner, well then perhaps changing to solar now that you have air conditioners with high SEER and new and so on, they may be over capacity now for your solar add-ons. As far as the structural of withstanding a Category 3 or having a new roof, that gets the last point next to the last slide, but let me also cover the bottom line there, people concerned about the exterior appearance. And this kind of also harks back to the issues of like reclaimed water and the massive change over in attitudes. Unlike participating in green power, you know I've often suggested if somebody signs up you ought to give them some type of sticker and put it on the mail box and the front door, I'm participating, you know like my child is a well educated on the kids and things. Because otherwise people don't know that you're giving, whereas if you've got those panels on the roof, people can see it outside and it becomes a status item. He stated whereas before it might have been something that had an aesthetic effect which was not perceived as being positive, so it may be that switchover as well as we move forward especially if you're the last person on the block that doesn't have one of these; so there's neighborhood effects.

(4-c) Solar Survey Results (cont.):

Dr. Soskin stated usually with surveys such as this, and with the 50 or 60 surveys I've done over the years or whatever, you know the Orlando Sentinel or the News Journal will write in and have an editorial that says good start, we need to do this more often, we need to expand. No, this is the only survey that's going to occur, this is a \$200,000 survey, if you count in all the times and things. And we had other uses and reasons to pursue this as a demonstration project, to maybe get more grants for you, with also national and state grants as well, and get this pursued as a prototype further on. The kinds of information you've gotten are going to be fairly good and reliable for quite a number of years so it's the next step involved. First off, you have information to decide who to target, to get the first ones. Environment, we economists call that a luxury good, poor countries do not care about the environment even though they are the worse victims of it. Poor people in lower income households are similar, so it becomes this luxury item and the first ones to adopt it are going to be the higher income and the more educated and so forth, but there are also strong patterns we've seen with some of the other variables.

Dr. Soskin stated the next thing is to estimate what kind of subsidy is necessary so that you're actually costing this out and saying we're not going to give people too much money. We're fortunate, we didn't get the kinds of responses, people be critical saying well gee, if I can't save money on this as we said, I'm not going to participate. The idea is how much are you willing to put in as your share and then how much must the public, state, local, county, federal and so on, put in to make this go and to the extent we can identify and get people to pony up enough of their own money, then you can make this more feasible. And then also in terms of government is putting through these things, you know Arnold (Schwarzenegger) and the Governor (Crist), and many of the big utilities of course fighting these things, and the munis getting caught in the middle between a lot of this. And also various targets and grants and things that you would then be prepared to handle.

Dr. Soskin stated finally, here are some of the things that you can be doing as well that people are not pursuing. The low tech solutions, using buying power, something we didn't do with the Medicare part Z or whatever they passed, so that you can drive better bargains the way Home Depot and Lowe's do in the process, or Wal-Mart against China. The second is local production, you can create jobs, be an instrument of economic development at the same time as you reduce the cost by having the fabrication and maybe some of the production going on here. You know research is pretty glamorous but the actual production aspects can really be done locally and lower the costs tremendously and the freight charges as well. Neighborhood wide scale savings so you can sweep across a neighborhood, okay this year we're going after this development, and that can create great amounts of saving in terms of installing these things. Combining roof retrofit and strengthening re-shingling, I don't know but I'm sure you might have heard what those enterprising University of Florida researchers did several months ago. They came down to the condemned homes in Port Orange and saw how much it would cost to strengthen the roofs of them against hurricanes. Also economies of scope, doing all three things in one fell swoop and lower the cost for everything. Finally, various installing and pushing for solar in government buildings, commercial buildings, and condos where there's very restrictive agreements or cooperative things, that's a separate set of tasks, so you would want to go after them at some point. He stated innovative rate structures in order to affect these in terms of pricing. And then finally, of course, additional conservation incentives because conservation is exactly the same thing as renewables, it reduces your use of fossil fuel sources. He concluded by stating thank you and offering to entertain any questions.

(4-c) Solar Survey Results (cont.):

Mr. Rodi stated first of all I would like to say thank you. There's a great deal of information that is in addition to this with regard to demographics and this for us is very valuable. As you've heard me state before, we plan to take our day ahead purchases and try to convert that usage into renewables on the ground here in New Smyrna. The way to do that is to focus upon solar, we have great hopes for the thin films as far as being very cost effective. He stated small wind units here, we've got to deal with the storage capacity to allow all of this to function on our existing grid. But this information also tells us who we can work with and there's a lot of detail and I had asked that we just try and boil it down. This will help us as we move forward because now we have a studied approach. You heard the relative value that we received out of this and it was very fortunate for us the University of Central Florida and others have decided to help us.

Dr. Soskin stated it was very fortunate for us to get a willing partner and one that was willing to try things and make use of this. But the optimal portfolio, the solution you're going to have is clearly going to be a combination. Some people say yes, I'll give my amount to green pricing but I don't want one of these things in my house or on my roof, and others will really take to doing it. So you're going to have combinations of those as well as some of the other solutions you're going to go with. It will make it that much easier for you to get there long before other cities and utilities have.

Mr. Rodi stated thank you, and added I didn't mean to stop any questions, I just wanted to express my thank you.

Chairman Allen asked Commissioner Hall if he had any comments.

Commissioner Hall stated not yet.

Commissioner Diesen asked if the Commissioners would receive a full printout.

Mr. Rodi stated yes, you'll have a full printout of this and then once we have detailed information, the studies, then that will be very interesting for you.

Commissioner Hall asked Mr. Rodi if this was at the exclusion of all other renewable energy projects that we've talked about.

Mr. Rodi stated no, what this focuses upon is solar in particular, but if you notice there's a lot of other information with regard to where people would spend their own money and how interested this community would be to move in to more renewables. Obviously, we should capitalize upon the solar capability. It's just like our R&D project, that's solar thermal based and assuming that moves forward then that would contribute greatly to not only having that technology here but we would hope in the end run being able to manufacture some of these applications for use elsewhere.

Commissioner Hall stated and this is a choice program, I think Dr. Soskin's survey was quite clear on that, just for the press to get that point.

Dr. Soskin stated the market based approach that would piggyback anything else you're doing, any decisions you make to provide rebates. Austin, Texas, for instance they have their own city and

(4-c) Solar Survey Results (cont.):

then there's a state and then there's a federal, and they put them all together to create these. But I also just want to remind you that this has never been done, no one has ever looked at solar hot water or roof top PV in a survey like this, no utility, no country, no state. They've asked questions but they've never done it in a coherent survey form because of the challenges and some of these things have just come along. So you have something that's dedicated to your particular area. To show you how particular, for instance, southern California had done that and the income categories that they had was under \$100,000, \$100,000 to \$200,000, and \$200,000 and over. If you asked those kinds of questions, you're going to give everyone one category, so it has to really be customer specific.

Commissioner Diesen stated to Dr. Soskin, you had a 14.2% return, it was only sent out once, were there any reminders.

Dr. Soskin stated no, there was an announcement before, and we also, as we said, had some word of mouth spread because we went to some of the customer feedback meetings.

Commissioner Diesen stated right, I just wondered if you gave it a couple of kicks, that's a pretty good response rate.

Dr. Soskin stated yes, it's a fairly intrusive survey and long as well, even though two sides per page.

Commissioner Diesen commented I remember.

Chairman Allen stated he appreciated all the hard work that went into it, Ms. Mahle working and getting things rolling. It's going to be a valuable tool for us.

Dr. Soskin stated and we have this in an Excel file so any specific questions you have, they want it to be this, by this, by that, I can always process as well.

Chairman Allen and Mr. Rodi thanked Dr. Soskin again.

(5) Commission Counsel's Report:

Chairman Allen then asked Mr. Preston if he had anything to report.

Mr. Preston stated no report.

(6) Committee Meeting Reports

Chairman Allen confirmed there were no committee meeting reports.

(7) Old Business

Chairman Allen confirmed there were no old business items to consider at this time.

(8) New Business

(8-a) Distribution System Operation for Water Quality Maintenance Program, Update 2008:

Mr. Rodi stated I will make a few opening comments, Mr. Hoover and I both will be working through this presentation. At our last joint workshop with the City, City Commissioners Plaskett and Hathaway asked a question about there's a lot of water flowing out of the pipes over here, what's that for. Obviously since that time there's been a great interest in what an auto flusher is and what are we doing about this or that or the other thing. So we have, we think, some very good information and with that I'll have Mr. Hoover begin and we'll go from there.

Mr. Rodi stated I would like, and I've often heard this at Planning meetings, and Mr. Hoover asked me not to do this but I'm going to do it anyhow. I want him to tell you what his qualifications are for the job he holds, the position he holds, if you would.

Mr. Hoover stated he would be glad to and I think they're germane to the issues that I will be sharing with you tonight, to get factual information out there that you should know. My exposure or my study in water and wastewater treatment and operation of these plants actually became evident in my college career. I transferred from the University of Florida to Florida Atlantic University to study marine biology, it was one of the few institutions that did that. So for a year I was working on that and then I found out at a career day that there were more employment opportunities in microbiology so I transferred my emphasis in the college of science, and obtaining a Bachelor of Science in Microbiology. I started studying water and wastewater treatment, we studied the rules and regulations of the Safe Drinking Water Act that was soon to be written and also all the lab work that was necessary for quality assurance for both drinking water and wastewater treatment. It looked like a good career to get into, environmental and health issues and community service. So I obtained a Bachelor of Science in Micro and then was accepted to the graduate program and in completing 35 hours of advanced course work for the Master's Program, I studied not only the design but the operation of both water and wastewater treatment plants, as well as the hydrogeology of the Biscayne and the Floridan Aquifer. I became a graduate teaching assistant, working on a couple of thesis projects, and ultimately decided to get into the real world. I found a way to transition from college to the real world into water and wastewater. I was hired by Daytona Beach to become a lab tech at the Brennan Plant in 1977. Ultimately I was promoted to become Chemist over all the water and wastewater plant laboratories. Then I took a job with Edgewater for a couple more years, I saw the opportunity to be a part of their building of a Class B Water Plant and open up a certified lab for them, a water and wastewater lab. Put a couple of years in there and by then I had my A license in water treatment and was hired by the Utilities Commission late in 1980 to become the Water Production Superintendent. For the next 10 years I was pretty much your main operator for water. By 1990 I was promoted to Division Chief of Treatment Ops. and given both plants and maintenance. By then I had an A license in wastewater treatment. Over the last 20 years I've gotten licenses in water distribution, reuse distribution, backflow prevention, and gravity sewer technician. I've also been awarded a life time professorship from DBCC to teach these courses in water and wastewater treatment where I've been teaching since 1977.

Commissioner Hall commented goodness gracious; you're close to retiring aren't you?

(8-a) Distribution System Operation for Water Quality Maintenance Program, Update 2008 (cont.):

Mr. Hoover stated I've got about 10 years left to hit 65, so not yet, I've got a few more years to try to excel here for you all. With that, we'll proceed into the presentation here. Basically questions have been swirling up lately about, just like Mr. Rodi said, City Commissioner Plaskett asked why are you flushing these hydrants, what are you doing, that looks wasteful, is that in line with conservation. So I'm glad to be able to answer these things directly. We call this program that's been ongoing pretty seriously since 1985, our Distribution System Operation for Water Quality Maintenance Program.

Mr. Hoover stated I had the premises of trying to teach you all some chemistry and microbiology but it would be very involved. This is such a complex issue I thought that it might be more effective just to answer the questions. Question number one that's been swirling is why is a flushing program necessary. It is strictly a water quality and a health related issue. It has to do with complying with the EPA and the Florida DEP Safe Drinking Act of 1974 which sets all the standards for drinking water and it's continually being expanded as we speak, as they see the need to. It relies on proper plant treatment at the plant in the production phase, as well as effective distribution system operation. What is the distribution system, that is the piping that distributes the water to all the customers. In our city, many would consider a small city, our Engineering Department recently put a figure on this with the CAD program, 290 miles of water mains. In a moment we'll show you what that looks like as far as the water grid.

Mr. Hoover stated the plant processes at our plant, a Class A facility, primarily it's a lime softening plant because the water comes out of the aquifer very clean, mainly has minerals in it that have to be softened. It's then filtered and chlorinated. The disinfectant is a strong oxidant that's used at the plant to reduce bacteria, improve color and taste, but it's also secondarily something that persists in the system to the tap, to guarantee the safeguard of the quality. What is persistence, I'd call it the staying power, how strong is that oxidant to remain in the system for a certain amount of time, hopefully until the water is used. It's dependent upon a few things, dependent on temperature and the age of the water, which we call detention time. As one would imagine the furthest points from the plants are the places that have the maximum age. So this book here comes from the Department of Health. In our State it's the Department of Health that oversees the drinking water facilities of the various counties, even though it's DEP that sits in ultimate control. This book here comes from DEP, it's called the Drinking Water Rules and Regulations, and there's several sections, one about drinking water standards, and I'll pull up a couple of excerpts from that with Mr. Rodi's help. Also the criteria for certification for the plant operators, as well as water treatment plant operation.

Mr. Hoover stated so to make a long story short, we have a fine line that we're walking here with water treatment. We have to treat it properly at the plant and it also has to maintain its quality all the way through the miles of pipelines to the customers. Two things that have changed in the years that I've been in this business, and with the continuity that I've had with 32 years, I've seen quite a few changes. One of the changes is in the 70's and 80's, which I call the "good old days" when it was easy, we used free chlorine at the plants. And we were only required, besides a whole lot of tests on different chemical compounds and things, we were required to do a coliform bacterial test and a free chlorine residual at the plant, and that was it. There was an assumption made that the water leaving the plant would stay that way all the way to the customer. Well, in 1985 as I said, there was a new disinfectant by-product that became regulated. No longer could we add free chlorine, we went to a combined chlorine which isn't as strong, and we were told that we were

(8-a) Distribution System Operation for Water Quality Maintenance Program, Update 2008 (cont.):

going to have to do a lot of flushing to maintain the minimum chlorine standards and to prevent bacterial build up in the system and failing samples. So at this point, based on our population size, there are 62 system samples at representative points throughout our system that have to be tested for chlorine and for bacteria. If any of those things fail, the regulators are on us real quick. I'll go into what happens if you do fail on the next couple of slides. But the good news is our system's never had to go to system-wide boiled water notices or chlorine conversions to free chlorine to burn out bacteria that were allowed to grow. Our water staff has done a tremendous job in this area. He then stated I have a couple of slides to share here and he switched to the opaque projector at this point.

Mr. Hoover stated what this slide (map) shows, north is straight up, this shows the intricate network of water pipes that we have. This is the same tool that we had produced when we did the water system study so it also has highlights of the short term, intermediate, and long term capital improvements we need. But basically if we look right here, this is the water plant and the water has to go to Smith Street to be pumped across the river and all the way down to the various areas of this distribution system. Of course the area where you see the really well developed grids, we have no problem, there's good flow, good circulation, the disinfectant persists pretty well. But when we get to remote areas like Turnbull Bay Estates, some of the new areas that have been stalled with their building, or the southern extremity down here in Bethune, we do have problems, those are the challenging areas. Some other things here I could highlight are the Third Avenue pump station, the South Beach pumping station, Smith Street pump station, of course our wellfields are all south of town, and this is a future pump station and storage tank for Venetian Bay area, the western service area. But the point that's being made here is that even though it's relatively a small geographic area there's a lot of pipes there, and if we don't flush we don't have areas that will pass our tests, we may have health issues. In the courses that we take and the licenses that we earn, we're taught to understand that the very young and the very old are the first people that would get sick if you don't keep your water safe. That's why the minimum standards are there, that's why we flush.

Mr. Hoover stated there's a couple of items from the standards that I did want to review. Here's the cover of the DEP Drinking Water Rules, this is basically the Water Plant Operators' "Bible". This is the one that speaks about microbiological monitoring requirements, we shall all analyze for coliform bacteria to determine compliance with subsection 62-550.310 and it says that these sample points will be representative of water throughout the distribution system. So the Department of Health person that we work with, their inspector, works directly with our Water Production Superintendent and our system maps to determine representative places on the extremities throughout. Those are the points that they settle on as saying now we know you're doing your job and we won't have people complaining to us of taste and odor problems and other things. He stated the next page speaks of that with the city, they determine that we're within the 50,000 to 59,000 range, we will have 60 samples. Well, they must have rounded up because they're telling us 62 samples per month. So twice a month we go out and sample 30 locations. Our chemist is here tonight, Curt McKenzie.

Mr. Rodi asked who determines the locations.

Mr. Hoover stated as I've said they sort of work with us and basically we give them the ones that we want and they approve them. Sometimes they'll say no, we want this area. They want to make sure, and he added they're water personnel. The lady that's our representative, worked for the

(8-a) Distribution System Operation for Water Quality Maintenance Program, Update 2008 (cont.):

Daytona operation systems for many years, so they know, and they're a vital part of our team to perform well; absolutely. So here's 62 samples we're doing per month. The next page is about the chlorine residual, disinfection of drinking water, and all suppliers of water shall supply that, (provide continuous disinfection of the drinking water they distribute). At the bottom of the page is the key point, all suppliers of water shall maintain a minimum free chlorine residual of 0.2 milligrams per liter or a combined chlorine residual of 0.6 or more milligrams per liter, through their entire water distribution system at all times. That doesn't leave much room for deviation, so basically it's a performance issue. How we perform on these samples determines how well we stand with the compliance people and how well we stand with water quality throughout the system.

Mr. Hoover stated I would like to also add that as of 2004, 2005, they also implemented a maximum mono-chloramine residual. I'll bring up why that has added to the complexity of the issue in a moment. He then went to the next slide in his PowerPoint presentation and asked what are the choices available to maintain system performance for sampling. I guess the first one would have been that you could ignore the problem. If you had areas where you didn't have sufficient chlorine, or the mono-chloramine that we use, there would be a fairly rapid progression through increasingly difficult and bad things. First, taste and odor complaints, customers would start calling and saying we're tasting stagnant water. He explained stagnant water's basically water that the disinfectant is gone from it and now it's starting to grow bacterial film. At that point you could possibly start failing your bacterial tests on the monthly sample runs. The Department of Health would very quickly impose a boil water notice for that area where the failures are occurring. If very aggressive flushing wouldn't solve the problem, then you would have to do what you often read in the newspaper any more. Some of our sister cities now have been resorting to conversion to free chlorine at the plant and then system wide aggressive and massive flushing to recover the clean pipes and clean storage tanks they should have kept in the first place. There's a loss of customer confidence when that happens, you can get fines, and there's penalties. Operators could lose their license if negligence is proven, and all kinds of media attention. So that's the worse thing you could do to these situations. I believe in the late 80's the regulators saw the need to impose all of these system samples to make sure that nobody could just ignore it and it could build up to be a serious problem.

Mr. Hoover stated so what you're left to do, and we were instructed when we went to mono-chloramine treatment in 1985, was that it was imperative we developed a strategic/controlled manual hydrant flushing program. So we started flushing hydrants in the areas where we were sampling to make sure our water was representative. There are areas such as V-Bay (Venetian Bay) and Turnbull Bay where there are problems now just based on where they are in the system and how much usage there is. I'd like to relate to you that really our water system is one set of pipes but it is a dual system. It is a system that is designed to provide both water for the residential needs and fire supply. I asked Mr. White one day how can I quickly tell why we need to flush, and he said well, basically the difference between the water that's in the pipes to give fire supply and the amount that's used by the customer is the amount you need to flush to keep the water fresh. I thought that was a priceless comment and boiling it down to just the brass tacks here.

Mr. Hoover stated what happens also though, in places like Bethune Beach, which is a very long arm of our distribution system and very remote from the water plant, the use of automated flushing was recommended to us by the Department of Health inspector. It sort of went against our grain but

(8-a) Distribution System Operation for Water Quality Maintenance Program, Update 2008 (cont.):

at that point in time our manual flushing was getting longer, it's a very obvious thing that you're doing out there. You could wash out the side of the road, your manpower is being tied up. Pat Carrico (Volusia County Health Department Inspector) advised us to use automated flushing like many of our sister cities. You could put it on at the late night hours when no water use is happening, it's more controlled, it's a low volume that doesn't affect the pressure as dramatically as a full flush from a hydrant, and it combats stagnation. If you want to see in Port Orange and Daytona where they're using these devices as we speak, driving up Pioneer Trail, just west of Venetian Bay's entrance on the north side of the road, you'll see one that Port Orange is using for a new long loop that they put in. And on Tomoka Farms Road, I was driving up there last weekend and I saw one that Daytona has just north of the entrance to the Tomoka Landfill. Same thing, our sister cities are left with the same tasks that we are, there's times and places that we need to flush to keep the water fresh to standards.

Mr. Rodi stated at Bethune Beach, what were the test results. You mentioned that the DEP and the Department of Health, so back around as I'm recalling this, around the May time frame of 2006. As you went around and did your testing samples, what were the levels there.

Mr. Hoover stated we were marginal, we were only performing marginally, which means we were dancing around that 0.6 minimum. And again the Department of Health inspector said you've got to do something else now, you've gone to the use of automated flushing and increased flushing is not bringing you up to the point you need, and this is on another slide but I'll share it now, so they suggested, recommended, and permitted us putting in a chlorinator there. And since that time we've been performing much better, I'll get into some details when we get to the sheet, in about two sheets, but it's a key point. We've changed one of our treatment modes here and it's now starting to really perform well for us. One thing that City Commissioner Plaskett said was well, what about all of this water loss. At last week's City Commission meeting Commissioner Hathaway was asking the same thing and said he had called up St. John's and asked if this was illegal dumping. They said no, it's not. He asked when does it become illegal and they told him when it exceeds 10% of your water produced, then we consider it excessive. Other than that we consider it the normal industry losses between production and distribution. Then City Commissioner Hathaway looked to me and asked what were our losses, and I said I would like to share with you that we put together an annual report with all our monthly statistics. When I first started here (U.C.), the guy who hired me, Rick Richard, said I was going to be the keeper of this. He said that with my background I needed to be the guy to keep all our statistics and refine this report. It also became a tool by which we won the best operated Class A treatment plant in the St. John's River Water Management District. I'd like to add also that the staff there, the water production staff, has netted in the last 25 years 10 awards for excellence. Seven for the best Class A plant in St. John's and three other ones with AWWA, and it's based on the statistics that are cut and dried as to how well we're performing.

Mr. Hoover stated in 1980 we had 17% unaccounted for water, and we're going to go over those sheets in a moment, but in 2007 the difference between what we produced and what was metered and revenue was 8%. It's been an aggressive program to get to those kinds of results. It's been a teaming with the Finance Department and the Meter Readers to aggressively replace meters that finally wear out or that can't be read so there are no estimates. It's been a partnering with the Engineering Department in getting in-line construction meters so that when new lines are constructed, the flushing and the chlorination is metered and paid for. Those kinds of things have

(8-a) Distribution System Operation for Water Quality Maintenance Program, Update 2008 (cont.):

brought us down to this 8% difference between what we're pumping and what we're revenuing. So losses at Bethune, there has been some speculation that they were much more than they have been because we were asked to get together a short report a month ago, what the current automate flushing volumes were and what would they be if they were projected out to a year. As I was trying to describe we were in a sort of temporary increased flushing once we got this chlorinator in gear and that has now been reduced. One auto flusher has been removed and one's been cut by 50% and we're still seeing very good residuals there right now. So what this slide says in essence is our choice to maintain quality in the system has been pretty much set before us. Have an effective flushing program, which is a combination of manual hydrant flushing where there aren't very serious problems, and automatic flushing where it called for more drastic needs.

Mr. Hoover stated there were a couple of quick pictures he would like to show here. The first is a picture of our automatic flusher down on Turtlemound Road. That's what you're going to see when you're going down Pioneer Trail or Tomoka Farms Road for Port Orange or Daytona. It is a device that was designed for this kind of application. I don't think anybody would design these kind of devices if a lot of cities didn't need to use them for certain aspects of performance. The next page is the specs on this particular unit. And we have a flow curve that we obtained, the top picture's really good. What I submit to you is these are a much gentler and lower volume flushing situation so that it can go into a prolonged mode without even using as much water as otherwise, without damaging the surrounding territory, and without reducing customer pressure. The specs say that it's rated at a maximum of 185 gpm but we went further now with this interest that has come, and we got a flow curve that says basically in the Bethune Beach area we operated about a 55 pound static pressure. Our flow pressures from our fire hydrant test that we do when we perform County maintenance, are down around 25 pounds of pressure. That indicates that our flow would be off of this chart, in about the 35 to 40 gpm zone and probably about 1/5 of what the former Superintendent there estimated. He stated I would submit to you that the estimates that we do on the water loss internally to try to account for where water's going is for our own needs, but the real proof of the pudding is comparing what leaves the plant and what's metered.

Mr. Hoover went to the next slide and stated since Bethune has become sort of in the spotlight, and it's been historically our most problematic area being the distal point from the water plant, as Mr. Rodi was bringing up earlier, in 2007 the Department of Health officials permitted the installation of a new chlorinator here. We were very reluctant to go that route because back in 1985, when total trihalomethanes became a regulated parameter, there had to be a study by consultants on how do these disinfectant by-products form. They form from the combination of some organic dissolved matter that's in our well water. Primarily things like tannins and lignans, leachates from trees and roots in the recharge areas over in the western part of the County, that are left over in the water. When they combined with free chlorine, they created these carcinogenic by-products. Recent studies show these things were possibly cancer causing chemicals, they needed to be regulated at 100 parts per billion. I submit to you also that when I was in college, parts per million was as far as we could test down to, and within the first 10 years out they could now test for things in the parts per billion range and this is where this limitation came in. For a background, our total trihalomethanes were 120, the regulation was 100. Our consultant said you've got two options, you can either greater improve the treatment process prior to free chlorination and remove those organic precursors with a very costly upgrade to your plant, or you can go to combined residuals and all you need to do is add ammonia at the end of the disinfection chamber and create mono-chloramine. It's

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not as a strong a disinfectant, you'll have to go out and flush more, but it's very effective and it will meet the needs, it is the most cost effective way to approach this, and happens to be the way that all the other cities in Volusia County have pretty much handled this.

Mr. Hoover stated so we were concerned that putting chlorine down there might bump us up over the limit. Pat Carrico stated yes, but you all have done some other things with your plant processes and have gotten yourself down to 60 now. He stated the limit's 80, I forgot to tell you the limit had dropped to 80 about five years ago. But at 60, she said even if you stimulated a little more formation, you would still be in compliance and we wouldn't have the problems down at Bethune. Otherwise we will need to go to a boiled water notice, your marginal performance is a concern for us. So we installed the chlorinator, Mr. Rodi supported that expense, a metering pump down there, controls and a chlorine tank. We put that into operation in June and very quickly saw residuals inside the tank and around the tank come up quickly. But within the next few months, slowly but surely, the residuals crept up to a 1, a 1.4, a 1.8, a 2.5 and by the time we hit January it was up around 3 and I said we can take one of these flushers out. The reconditioning program that Steve Zimmerman started and his staff, has now been effective. We removed one of those in January and in February we saw a 4.0 down there. We set the other one on half of the setting that it was. In last week alone we got two separate calls from long term residents in Bethune that said for the first time we taste quality water and fresh because of this chlorine situation.

Mr. Hoover stated so what does this slide say, basically, the addition of new equipment at the South Beach has proven successful in helping resolve this long term issue and we temporarily do use auto flushers and in the application that we preceded with down there, it has now restored the clean pipes and the clean tank that we need to keep performance where it needs to be.

Mr. Hoover stated the last thing I'd like to say, and added he had gone off of the last slide, one thing I forgot to mention was that in 2004, 2005, the State limited what our average mono-chloramine residual could be in the whole system. What did that do to us? There were times that when it started to drift out of the healthy range in Bethune, we would just bump it up a little bit more at the Water Plant. Well, now they've told us you can't do that anymore because in other cities where they're doing that, the people that live close to the plant are saying that it's too strong. So basically by shaving a little bit off at the plant, the furthest point became a problem and this additional chlorinator helped solve that problem.

Mr. Rodi stated so they put a cap on the max we could go with and then on the bottom side you can see that we have the opposite problem.

Mr. Hoover stated okay, drawing this to a close, what other options can we consider here because although water quality is job one, in the coming years conservation becomes more and more prominent. One thing we're considering, and it came from one of our consulting engineering firms, the idea of a recirculating loop at the southern end of South Atlantic. South Atlantic Avenue is the end of Bethune and it is a dead end main. Turtle mound Road is a long dead end that actually goes a little further into the park. We were going to combine those with a cross over pipe and a small pump and make a loop of about an 1/8 of a mile and recirculate the water. It was told to us, it doesn't make scientific sense to me completely, that if we keep the water moving, that alone, that physical movement of the water, will help reduce that decay of the disinfectant at the very end of

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the system. So we talked to DEP this morning about this being one of the projects that we could pursue, they were quite interested in it.

Mr. Rodi stated another part of that philosophy is that there's such limited use there that if the circulation for the limited use could move around and retain the chlorine, rather than remaining stacked in the pipe, then there is some opportunity for that chlorine to act within that loop. So that what we're trying to do is see if this approach will work and obviously, that's a next step. What our angle is, if it does work by itself, then we've diminished further the need for auto flushing on the remaining auto flusher, and then additionally, if we need to put in any kind of an ozone injector. He stated I start getting a bit concerned about that because that would sit out in the open. So just like a chlorine cylinder, if you have things out in the open, you know, there are folks that tend to be sort of curious about things; so you have a number of other issues to deal with. So, we're going to take this a step at a time and see if we can size the loop to be effective without incurring significant pumping costs just to push water around in a circle.

Mr. Hoover stated one of the capital improvements that is coming our way shortly is the 20" low pressure transmission main from Glencoe straight to Smith Street. One thing I can show you from a diagram here is that when we used to have this line. Let's do the bird's eye view with the red line all the way from the plant to Bethune. He stated what that one tells us is, consider if you will, the red line between the Water Plant and Smith Street. That's what our low pressure transmission main looked like, it took water directly from our filter clear well by transmission pumps to those two storage tanks at Smith Street. And when we lost that line and it was converted to reuse, now it goes through all of the network of the grid. We're talking about 290 miles of pipe in our entire grid, I would present to you that about a 1/3 of that pipe's between the Water Plant and Smith Street.

Mr. Rodi stated what I would like to point out (on the map) is you can see these numbers, here's 12" going down to a 10", a 10", a 10", a 12", and a 16". Over in here you can see back to a 12", to a 10", to a 12", to a 12", and then this is a 10" pipe going all the way down to the end.

Mr. Hoover stated this item was intended to show that it's 10 miles as the crow flies from the plant to Bethune, but with 290 miles of pipe and several storage tanks and pumping stations in the entire grid, that all becomes part of your detention or aging time for chlorine. Unlike some of the portrayals I've seen lately, it doesn't build up with time, it dies off with time, that's why the flushing is necessary. But when we have the low pressure transmission time back, our detention time will probably fall by a day at least, and that should help this equation. Where we sit right now, this water will go straight from this clear well to Smith Street, instead of through a 2 MG tank, and then through the entire grid west of the railroad tracks squeezing through a few lines and then through the central mainland to get to Smith Street. I'd also present to you, that at Smith Street, part of the water that's being left from that pump station, being pumped out of that station, can return to the same grid, it fills the tanks. There's some recirculation going on and aging that no one considered when that decision was made. We wanted the low pressure line for efficiency and lower electric costs. It's going to help immensely in the chlorine performance and the microbiological quality of our water.

Mr. Hoover stated I think there were a couple of graphs there I'm not sure we should share now or when I finish this because it has to do with water loss; let's hold off for a second. He stated some of

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the other considerations that we need to make are this. These are larger issues that the Commission and the CEO and the staff, and in some respects the whole public have to decide, do they want to do the very costly fixes to the plant - the improvements that would allow more removal of organic matter and a return to free chlorine. Membrane treatment is something people normally speak of when you're desalinating, but it also can be used to remove hardness. Of course there's losses with that because you create a reject water and there's production losses even with that treatment process. But when you can return to a free chlorine, those 10 years that I was in this business before that change, the storage tanks stayed remarkably clean, as well as the piping systems, and flushings were not needed. The staff was a lot more content to stay at the plant and do their work and not have to venture out every week to flush. But they've been vigilant and I think we can owe them some real thanks for not having to do system wide flushing and free chlorine conversions. Other treatment processes that could be considered are ozone and free chlorine. Enhanced coagulation to coagulate and precipitate more precursors out from the softening basin. Activated carbon filtration was something that was evaluated when we went to chloramines, it's a pretty good way to take out precursors, the things that form with chlorine to make the trihalomethanes. The problem is the carbon gets spent after six to twelve months and you're digging up your filters and replacing this. Some people have spoken about the idea of recovering flushed water in tanker trucks. But again, when you're selling reclaimed water for 15 cents per 1,000 gallons, and I'd like to present to you that from our 2007 Operational Manual, our cost for treatment and distribution, including everything from the wells right to the spigot, is \$1.469, a lot cheaper than what we've seen otherwise; so it's a cheap commodity at this point in time.

Mr. Rodi stated as you may recall in the joint meeting, City Commissioner Plaskett asked about why can't we collect this. So we had our procurement area go out and try to get a price on what a 10,000 gallon tanker's going to cost and what's a tractor going to cost to pull it. Well, the tractor is \$141,000, the tanker was about \$80,000, so then we started looking around for used things. But it comes down to something very practical and just think about this, we showed you the flow curve where you get 35 gallons per minute, so if you pump for an hour eventually you can put 10,000 gallons into this thing. Well, you've got to get the truck there, so if you're paying somebody \$20, let's assume they can get this thing set up and pump for an hour and you could load this truck. Then what you have is 10,000 gallons at a couple dollars per 1,000; so we've got \$20 of recovery. During certain times of the year, the real tragedy of all this is, let's say we haul it somewhere, and where are we going to take it, probably to our reuse pond. So then we'll pump it over there, and we're way in the hole, but the really bad thing about that is we put it in the reuse pond and when we can't push it out to the golf courses and others that are using our irrigation water, where does it go? It goes right into the Mosquito Lagoon, goes out by the AOB, that's our outfall. I just thought it appropriate to comment on that, economically it doesn't make sense to do, and from a standpoint of what could happen in the end result, it's just sort of difficult to deal with that.

Mr. Hoover stated so the real point this slide is making is without real changes and upgrades to the plant, we would be unable to perform differently or change the mode that we're in now without a pretty significant amount of flushing. He stated now if we could look at those tables, with the actual data and how our performance is within industry standards. From the 1981 annual report, the top column on the left, the total treated water produced by the plant, and then the metered sales, if we subtract those two we come up with the loss or unaccounted for water, 187 million gallons in a year. Of our produced water, that's a 17% unaccounted for figure, and in a highlight below you'll

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see a note that says actual unaccountable water loss is 12%. I got these figures from the Florida Department of Environmental Protection when we applied for the award. They said it was an industry standard that 5% was normally what you can't account for in hydrant flushing, operation and maintenance of those hydrants, fire fighting, water breaks, and other treatment process losses. So let's look at the next page, from looking at a 17% unadjusted gross loss, this page comes from the 2007 operating summary that we just completed. If you see the top figure, total treated water, 1,798,000 KG and then if we compare that to the total metered sales, subtract it, we have a 8.1% loss. So compare that to the 17% in 1980, 1981, we've improved dramatically. If we take in the C. column which is our own internal estimates that Pete Korelich, our former Chief Engineer, suggested we do, we account very statistically with detailed reports on how much water we use for construction by our own crews, hydrant flushing, and water breaks. We also have the City and the County fire hydrant use. There's about 1,500 City hydrants and over 200 County hydrants that we perform the maintenance on. There's a portion of flushing that we can account for, so the total unaccounted for water is about 61 million gallons. If we look at that, that's a 3.4% adjusted loss. That's one of the best figures we've seen and if you look at the last four year figures there that I penciled in, if we look at the total gross loss unadjusted, we have a 6.65% for the last four years. Again, St. John's, DEP, they all say 10% or less you're doing your job, you're doing what you can to perform the way you should in this business. An electric plant's got power losses in the plant, there are line losses through the miles of electrical lines and the transformers. He stated 6% is their industry standard, ours is 10% and we're at 6.65%.

Mr. Rodi stated just as a comment, in 2007 I believe we had two major fire events. One was a fire that occurred near Sugar Mill and the other one was right down town here. In the fire here downtown, there was a million gallons of water used just in that one night.

Mr. Hoover stated we did our best to estimate that but we haven't been driven by meticulousness on our estimates when we have the gross loss figure to go by as the real rule of thumb.

Mr. Rodi stated that water would have been unaccounted for, we estimated the use of it, but it wasn't metered, and we did have the gross production coming out of the wells, it was included in that total 8%.

Mr. Hoover continued and stated but there will be a point in time where we need to look at upgrading the plant processes. Another thing that's coming on the horizon is the 60 ppm limit for total trihalomethanes and I told you we're at 60. So when that day comes we need to consider some things with the plant at that time and also this conservation issue. This last summary sheet takes data from each of those two years, 1980, 1981 and 2006, 2007. This is some very good statistics, I think, to state the case. In 1980 we produced 1,064 MGY, in 2007 we increased by 70% to 1,799 MGY. We're starting to approach doubling the amount of water and anybody that's lived here that long knows how many more people there are and how much more congested the roads are. It's the same thing with our water pipes and the use and the production figures. So the water loss figures, in 1980 was 187 MGY, if you remember I pointed that out, and in 2007, it was 147 MGY. So even the gallons that we lost from unaccountable in 2007, while we were pumping much more water through many more miles of pipe, we went from 8,000 connections to 23,000 connections, a lot more hydrants and fittings and valves, and our water loss went down 21%. I think that's a startling fact that needs to be addressed here. The summary of the water loss 17% unadjusted loss in 1980

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compared to 12.8% this year. He corrected that by stating the adjusted loss was 12% in 1980. In 2007 it was 8.2% compared to the 17%, and 3.4% compared to the 12%. What's really remarkable here, and it's sort of interesting, is that when we kept track of everything we could on hydrant flushing and breaks and construction losses, we came up with a 4.6% that we adjusted for and the State had told us in 1980 that it was 5%. So 5% is what they told us was the standard, and we worked like crazy to keep data and it came out to 4.6%; remarkable. He stated I might mention there at the bottom, I listed what are the unaccountable water loss items. First and foremost are unmetered, illegal connections. We find a few of those every year, we call them the Key West connection, people just plumbed in their pipe and nobody saw them and we're doing work and we find it. We take care of it, report it to Finance, and get them to put a meter in there and disconnect them. Other places we find them are at condominiums that have fire line services that somebody plumbed into or opened a valve on and now are filling pools and supplying water to the residents with it. So then we put in a new type of fire flow meter that's a combination residential and fire flow unit and we take care of that end of the loss. There are also construction losses that we don't get reporting on, there's water breaks, there's fire fighting and training. Like I said there's three different fire departments training on our hydrants now, Turnbull Bay, Silver Sands and the City. There's also the maintenance and the operation of 1,500 City and County hydrants, they have to oil them and operate them every year to make sure they're ready for fire emergencies.

Mr. Hoover then commented he was sorry to take so long, but these issues have come up and I think Mr. Rodi is ready to devote this time to it. He stated this next slide is related to a recent article and complaints we've had from two businesses down there (Bethune Beach), about our hydrant flushing in that area possibly causing damage to their ground water. They had brine wells for bait, keeping their bait alive, and one fellow was doing aquaculture, which is one of the things I studied in college so I enjoyed reviewing his operation with him. In both cases our former Superintendent, Steve Zimmerman, who retired last month after 30 years here and 22 years as the Water Productions Superintendent, who lives in Bethune and eats at J.B.'s, and he didn't realize they had a brine well. Nothing we did was intentional to damage anything and when we found out about that problem we took the auto flusher out immediately. The place just a little bit to the north, four months earlier, which used to be called the Hook, Line and Sinker, and now it's called Southern Cross Bait and Tackle, when they told Mr. Zimmerman that they had a brine well and that the hydrant flusher he had put across the intersection from them was possibly a concern for their brine well, he took it out immediately. Unfortunately he moved it to the next place down the street where we had vacant lots, he was picking places based on multiple vacant lots so it didn't disturb anybody. Then we were told we chose the only two places around where there were bait shops. It wasn't intentional, it was just part of our program and we removed them immediately.

Mr. Hoover stated I'd like to submit to you that a couple of different things here. There's a Mosquito Lagoon Aquatic Preserve study here that was done by experts. It says there's a wide fluctuation in the salinity or the saltiness of the water down there in that area. Why? They felt like the major contributing influences were fresh water canal drainage, the discharge from the wastewater plants for Edgewater and New Smyrna Beach, rain run off, and development creating more impervious surfaces. What I submit to you is, the fellow that's with the clam culturing outfit said he'd had readings from the river that fluctuated from 22,000 ppm of chlorides all the way up to 40,000 ppm. So if there are those kinds of fluctuations in the river, and I've also studied salt water testing of the ocean, it also fluctuates quite a bit depending on weather. What would we think

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would be the type of water that is saturating that barrier island in the 25' to 35' deep range, the sea water that's available. Another thing, a consulting engineer said which I asked two weeks ago about this issue, did he think fresh water discharged on the surface could influence brine wells. He felt it was a permeability and percolation issue and that an area that is super saturated, such as this long barrier island, would have a very low probability of fresh water on the surface displacing the salt water influence of the hydrology of the area. If I would recall to you, about 10 years ago, the County required everybody to go off of their septic tanks and we extended our sewer system down there because their studies had showed that the septic tanks were allowing sheet flow straight out into the river and carrying coliform bacteria and for that reason they wanted the septic tanks removed. I would submit to you that the same thing was happening with any fresh water, whether it was rain water or the water flushed by our units. It was not displacing salt water, I don't think it was likely.

Mr. Hoover stated down here (on the slide) where it says standard theory, everything I've learned in the course work in the college level and during my career, and I think people have often read this in the newspaper even, that when you have wells and they're fresh water wells, there's a point where if you pump them too much salt water gets in there. They call it salt water intrusion and once that happens it's an irreversible situation. With the salt water that's permeating the sand bar down there, I just don't think fresh water on the service was displacing that salt water. It wouldn't seem real likely to me. One other thing, I was discussing with Mr. Rodi, was the rainfall event of one inch over an 1/8 of a mile which is one of the blocks down there. Represents 250,000 gallons and our flushing was far less than that, especially if you apply the correct 35 gpm to 40 gpm figure to it. It's a hard one for us to tell for sure but one thing I wanted to share with you is that I took a brine well sample from the Hook, Line, and Sinker location where we had removed the auto flusher for four months, and also one from down at J.B.'s at the same time, and they were the same reading, 24,000 ppm of chlorides. So at J.B.'s we had only removed the unit three days earlier, three, four, five days, less than a week. So we did a sample and he (Mr. Sullivan) said see that's 24,000 ppm and I used to get 28,000 ppm. I didn't share with him, because I knew it might be considered adversarial, that the sample right down the block was the same value and we hadn't discharged water there in four months.

Mr. Hoover stated so the last thing I have as an observation for you, this is the country boy and I think Walter Allen will appreciate it because he worked here for so many years, when our crews go down there (in Bethune) to dig up water lines that are three foot deep, we have to use dewatering pumps. The water's coming up faster than we can affect the repair. If we go down six to eight foot deep to work on any of those new manholes, we're using dewatering pumps and well points. The water's coming up, what kind of water is it, it's saline water, and I don't think water on the surface is going to overcome that kind of hydrostatic pressure. He reiterated it just doesn't seem real likely.

Mr. Hoover stated so with that said I think we can entertain any questions.

Mr. Rodi stated well, if you would, I wanted to provide some other information. Mr. Hoover was referring to specific gravity and here's a chart just to show you, at certain temperatures and the weight. As far as fresh water and sea water or salty water, you can see here that the green indicates that the specific gravity at 4 degrees C is one (1000.00). Sea water is heavier, at 1025 (1025.18) at 25 degrees C and sea water at 77 degrees F is also heavier (1021.98). So this just isn't a matter of

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speculation on our part, you know, sea water is heavier and therefore presumably fresh water would be on the top of it, so it wouldn't sink down through it. He stated Mr. Hoover referred to some parts of the Mosquito Lagoon study and when I talk about the discharge, this is the U.C.'s discharge up here, this is Edgewater's discharge and the canal, and this is Mosquito Lagoon's; just to give you an idea. When you read through the report, and this is dated November 2007, you can see there's a lot of information in here but what it says is the inlet has a very dramatic influence on the concentration of chlorides in Mosquito Lagoon. Wind does, the weather does, and if you look at just this picture here, the comments, along with Edgewater as far as surface runoff, are very much of an impact for the Lagoon. So that's a bit of background information with regards to those items.

Mr. Rodi stated we start talking about just some information, I think it's rather interesting, average rainfall in New Smyrna Beach, 52 inches a year. Out of this report they were talking about 48 inches on average. Looking at gallons per surface area for one inch of rainfall, a 1/8 square mile, I started with this one because if you look at this chart, this is a very narrow area and this is about an 1/8 of a mile and here are the two hydrants and they're separated by about a 1/2 of a mile; so that's a reference that I wanted to give to you. Going back here, an 1/8 of a square mile, and here are the calculations, it's 271,000 gallons for one inch, a 1/4 of a square mile is over 1 million gallons, a 1/2 square mile is up to 4.3 million gallons, and one square mile is 17 million gallons. As far as our auto flushers, we have two at 25 gpm x 60 minutes x 4 x 7 days is 58,000 gallons a week. The second one was 73,500 gallons, a total of 131,500 gallons. From June (2007) through January (2008), this total, 4.2 million gallons which is about the equivalent, and these were separated by about a 1/2 mile, of 4 million gallons; 4 million gallons for one inch of rain. And last year we were short rain, three or four inches, this year, year to date, we're short two inches. So I think some of the facts become important.

Mr. Rodi stated Mr. Hoover showed you that line as it runs from Third Avenue all the way down to Bethune Beach. One of the things that I thought that might be interesting is to calculate how much water is in a foot of pipe, how many gallons. For a six inch pipe, and here are the calculations, it's just pi r-squared times a foot divided by 231 cubic inches, for a 6" line it's almost a gallon and a half (1.47); and you can read these. From Third Avenue Pump Station it's 44,000 feet and it's composed of 16", 12", 10" and 8" pipe, so there may be a stack of 150,000 gallons just in that line, let alone some of the branch lines that go toward the ocean in the more populated areas and where it's wider; so there's much more water stacked up there. In trying to flush these lines at 131,000 gallons a week and you have a 150,000 gallons just stacked in the line, plus a million gallon tank, you can see the idea was run it through, let it sit, let it act, push it through again, take your measurements. Keep repeating that process until you get it up to standard, and that's what happened. So I thought that it's worth proposing some information, and that's what happened. It's sort of like if your car can do 100 miles an hour, that doesn't mean you're running up and down Atlantic at 100 miles an hour. Mr. Rodi then stated with that, any questions?

Chairman Allen asked if there were any questions.

Commissioner Diesen asked is there any place that has something similar and that they are capturing rather than flushing into a body of water?

Mr. Rodi stated I think what I've seen is if there's the ability to have a storage pond in a certain area

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and then be able to use that into a reuse system, then that's the most effective way. I'm not aware that anyone here does that and I think what's really happening is that we are changing from looking at what we thought was an almost unlimited resource, very inexpensive, to a very precious resource that has to be managed better. And part of what our steps are here is trying to figure out other ways where if we can put in these loops, it's an alternative. If you go to the South Beach and you dig a hole, as Mr. Hoover said, it's going to fill up with salt water. So that doesn't make sense to do it there but other locations it may. There's an area over off of Turnbull Bay where there's a new subdivision and there's an auto flusher in there because that's on the end of a line, there are only two homes in there out of the, I would imagine he's got sixty lots in there. So that's an area where we have to run that auto flusher, and if we're able then to put anything into his pond. But he doesn't have any irrigation system in there that is related to reuse, but he does have surficial well points to water his common areas. I think we'll evolve into better use of how we take advantage of what we can take advantage of, but you can see with all of this that we're learning to do things a lot better. It's just like moving from fossil fuels to renewables if they have enough of an advantage, and advantage is being defined differently now. It's happening on both ends with our natural resources, water and energy.

Commissioner Diesen stated but it doesn't matter, it's never going to change the fact that if water just lays in the pipe it's going to, it gets... She commented jokingly you can grow the kind of algae that you can use for energy, maybe there's something there.

Mr. Rodi stated there's some of that too, but just like when you root a plant, you can watch what happens to the water after some time.

Commissioner Reynolds stated I'm thinking of some entrepreneurship, how many gallons a year do we flush, you had that chart.

Mr. Hoover stated 41 million gallons.

Commissioner Reynolds stated I wonder if we put out a request for proposal for someone who wanted to capture that water based on your schedule, and sell it to them for whatever the going rate is per 1,000 gallons.

Mr. Hoover stated if we had somebody who could do that for us we would be willing to do it.

Commissioner Reynolds added there's a lot of farms out there you know, they would love to have 5,000 gallons of nice, fresh water; added just thoughts. The other question I had is as standards become strict or stricter, and we're improving our plant out there as you discussed, there's some point in time where the aquifer will not provide sufficient water and we may have to go to desalination plants. So wherever that line crosses, hopefully we will have the equipment on hand that will accommodate desal water.

Mr. Hoover stated absolutely, and this was the point I was trying to make with the \$1.469 per 1,000 gallons, at this point still, with lime softening, a fairly economical product. When we get to the desal plant or even if we used RO so we could save some water, we're talking about a tremendous investment for that upgrade to the plant and the cost per 1,000 gallons approaching something in the

(8-a) Distribution System Operation for Water Quality Maintenance Program, Update 2008 (cont.):

\$8 to \$10 per 1,000 gallons. So a normal customer would go from \$30 to what, approaching \$250, \$300. At that point you know you've got the conservation covered but it's a very costly equation to create water that pure and reducing the flushing needs by going to free chlorine.

Mr. Rodi stated I want to emphasize one point, first and foremost we are keeping the water system safe. I think that in the course of a lot of discussion and as we learn, we'll find better ways of doing things as evidenced from the information Mr. Hoover showed from 1980 even until now. But I don't want that fact overlooked because it can easily be lost in what I've called before, agit-prop.

Chairman Allen stated okay. He then stated I see some hands going up out there (in the audience) and jokingly commented I'm not sure if they want to purchase that water or not.

Public Participation –

Mr. Ken Taylor addressed the Commission and stated I'm going to make a brief speech, one I've made before. I'd like to agree with Mr. Hoover and Commissioner Reynolds. I have said for years, and others have said it, that you pay now or you pay later for the water. This City had decided that they would start a storm water utility and they were going to deal with storm water, which is all the water that comes down in rain, goes out in the river, and is unusable. They have a consultant who works for them who is suppose to be helping them do something with that water. The ideal thing would be what City Commissioner Hathaway suggested the other night, and that is recover the water and reuse it some way. But in order to do that you have to put the system in place, you have to plan for it, you have to spend the money for it. He stated you can spend the money now or you can spend the money later. If you were spending the money now, then all these worries that Mr. Hoover and Mr. Rodi have would be gone in a few years. In my opinion, you guys ought to think about it and go tell the City to get out of the storm water business, they don't have a staff running the storm water business, they have a consultant. They don't have Mr. Hoover and his organization running storm water. Their purpose is other than what I think is to recover water at a reasonable cost. And you guys are going to have to do it down the road and pay the price whatever it is, so plan ahead and do it, and take that utility over. The Charter says that you're suppose to be the utilities people, not the City, but in prior years the City decided they were going to take the storm water utility. The Utilities Commission has not wanted to do it because it's been a mess and very costly, but you really should take that on as an issue. Give serious consideration because this town is going to have to have water and I think many of you have said that aquifer is going to dry up, what are we going to do. We're going to either have desalinization plants or a combination of things as Commissioner Reynolds has said, and it's going to be costly. You can reduce the costs by planning ahead and using the best technology over a period of time. Thank you.

Mr. Tolley addressed the Commission and stated good work to Mr. Hoover. He then stated I'm going to ask you a question, how long has the U.C. been flushing. He jokingly commented and I don't just mean at the house, how long have we been flushing the lines.

Mr. Hoover stated the program started, I think to be emphasized, as soon as 1985 past when we started chloraminating.

(8-a) Distribution System Operation for Water Quality Maintenance Program, Update 2008 (cont.):

Mr. Tolley stated so we go back, I just want to get this right because City Commissioner Hathaway seemed last week a little surprised by this flushing thing, so we're going back 12 years.

Mr. Hoover stated 1985, we're talking about 22, 23 years.

Mr. Tolley stated so I'd like to know where these Commissioners were, since we've been flushing for 12 years, to bring it up the other night.

Commissioner Diesen interjected 23 years we've been flushing.

Mr. Tolley stated 23 years, so this goes back to the old days then, but we've been doing this a very long time.

Mr. Hoover stated yes sir.

Mr. Tolley stated so why do you think, and I don't want to put you on the spot, all of sudden this is getting some limelight in The Observer and our friendly jaw jackers over there at The Shadow who never come out and put their names. Why do you think this is happening?

Mr. Hoover stated well, as Mr. Rodi says, water is coming to the forefront. It's becoming more and more prevalent that with the growth we're experiencing, there's a finite resource that needs to be managed as tightly as possible. I myself, before I got this career, when I turned on the tap I just said it's magic, somebody does that for us. So I think there's a complacency that's starting to change.

Mr. Tolley stated I think I'll ask the Commissioners at the next meeting how come they weren't aware of it for the last 23 years. He concluded by stating thank you folks.

Mr. Taylor commented from the audience it's been longer than that.

Commissioner Zeller stated to Mr. Hoover that was a very good report.

Mr. Hoover reiterated sorry it was so long.

Commissioner Zeller stated I did go out and find those auto flushers in Port Orange, they look just like ours.

Mr. Hoover stated to Commissioner Zeller, I appreciate that effort. He stated we feel like we're doing the best we can with what we have. I think we have a great staff here, they're very loyal and productive.

Chairman Allen stated I'd like to comment I appreciate the good work that you're doing in leading your group and I appreciate the employees and the diligence that they do. We have the best water in the area, I hear that comment all the time. When people come to town and drink our water, they just marvel at the quality of the water we have and that's one of the things we need to be proud of. And to see that we're on top of it, and the general public can feel assured that they're going to have the best water that there is.

(8-a) Distribution System Operation for Water Quality Maintenance Program, Update 2008 (cont.):

Mr. Hoover stated yes sir.

Commissioner Diesen also stated good job. She then added I can't understand how LA has the best water, they must not have tasted our water. But great job and I hope you have enough of that information, that you'll have information packets available for the appropriate folks.

Mr. Hoover stated those reports we put together every year mainly keep it easy for us because that same information is asked every time a big project comes. So to me, it was academic to keep that up and keep it accurate.

Commissioner Hall then stated, like everybody else, good job, great job. I hope that the reporting of it is correct. He added that's not your problem though.

(9) Possible Other Business – Time for Commissioners:

Chairman Allen stated okay with that, other possible business, time for Commissioners.

Commissioner Diesen stated Happy Birthday to Commissioner Hall.

Chairman Allen commented another year younger.

Commissioner Hall stated that's right, I'm only at 57.

Commissioner Reynolds stated I think maybe Mr. Taylor and I will go into bottling New Smyrna Beach water.

Mr. Taylor stated I've told them that for years, they won't do it.

Commissioner Reynolds stated I have told them too.

Chairman Allen also asked Mr. Rodi if he had any business to discuss.

Mr. Rodi stated I just wanted to make a comment and I'll be brief with it. I asked Mr. Lemoine to speak to this but I'll cover it. We have a digital phone system here, brand name is Avaya, and it was installed several years ago, basically to support the telephone business. What's happened over this amount of time, we once experienced an outage about a year and a half ago now where the data system and the digital phone system were together and we had a hardware problem and it just took everything down. What we found out was that most of the hardware on the system is obsolete. Our maintenance contract is now expiring, and has expired I think, and at next meeting I'll ask that Mr. Lemoine present a replacement for this Avaya phone system. The reason why I bring it up now is that the last time we ended up having to go to Nebraska to find a used hardware component in order just to get the system working again. So in the interim if we have a problem we do have a fix, it may require some emergency action on our part, so I wanted to make you aware that we're in that mode. The maintenance is meaningless at this point because they can't maintain something they don't make anymore, so then they look for parts from other old units like this one. So we're on the edge of replacing that phone system and we'll bring that to you next month.

(9) Possible Other Business – Time for Commissioners (cont.):

Chairman Allen stated okay, so we don't need to make any kind of action.

Mr. Rodi stated no, I just wanted to make you aware in case I have to do something.

Chairman Allen stated I have one item I wanted to share with the Commissioners. I had County Councilman Jack Hayman call me in reference to the Mission Oaks situation out there. I just kind of shared with him that the Commission was talking to the City of Edgewater with that and they've pretty well understood and knew what they needed to do, all they've go to do is do it. I understand there was a meeting down there at Edgewater and Mr. Hayman was going to be present there. I thought I would just make you aware of that, that I received a call. He added I don't know if any of you had received a call. He stated one other thing I want to comment on is looking at the latest fuel adjustment ECAC that just came out and I see that we're recovering fairly good. It's commendable to say that we worked toward that even with a slight reduction for the summer time, and it looks like it will be fairly positive, even with what we look at on the horizon, and what's taking place on power supply. As we make decisions next month and forward, I think our rates are still going to be fairly competitive. I commend Mr. Beyrle and his group out there for being conscientious and watching that power supply; it's great.

There being no further business to come before the Commission, Commissioner Diesen and Commissioner Hall made a motion to adjourn. Chairman Allen closed the regular U.C. meeting at 8:24 p.m.

APPROVED:

ATTEST:


CHAIRMAN


SECRETARY-TREASURER

These minutes were formally approved by the Utilities Commission at their March 17, 2008 meeting.