

ENERGY SERVICES DEPARTMENT 2015 ANNUAL REPORT

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TO OUR COUNCIL

OVERVIEW

This is a summary of various activities conducted by the City of Ellensburg Energy Services Department during 2015. This annual report summarizes energy sales statistics, progress on the Energy Efficiency and Conservation Strategy, conservation, fuel switching, marketing efforts and the Renewable Park expansion.

The Energy Efficiency & Conservation Strategy was completed with American Recovery and Reinvestment Funds (ARRA) in March of 2012. It was intended to be a planning tool providing guidance and structure to the City as it continues its efforts to reduce overall energy consumption, thereby fostering cost savings, economic development, and long term sustainability. Energy Services, Public Works and Community Development divided up the recommended sample strategies with each department assigned items specific to their area of responsibility. While Energy Services has a long history of energy conservation efforts, a renewed effort to evaluate completing the 18 items assigned to our department has begun.

The original group of low income and low income disabled customer homes needing weatherization were completed early in 2015. A new professional services agreement with HopeSource was approved by Council November 16, 2015 to continue providing this valuable service to our low income senior and low income disabled customers with light and natural gas utility funds and BPA conservation funds.

In 2015 rebates were offered for fuel switching from electric heat to natural gas as well as installing natural gas appliances in new construction as a way to minimize future purchases of the more expensive Tier 2 power supply. Results of those efforts are included in this report.

A renewable energy product was created to market the output of the Renewable Energy Park to our customers that are willing to help pay for the cost of more expensive renewable energy. This will also provide a funding source to provide renewable energy education and maintenance to keep the projects operational. Results of those new rates are included in this report.

FINANCIAL HIGHLIGHTS

Late in 2014 Council approved a rate change for both electric and natural gas utilities effective January 2015. Wholesale electricity rates from Bonneville Power Administration went up in October driving a 5% electric rate increase. Residential rates for both electric and natural gas were redesigned to send a price signal to reflect Tier 2 costs and incentivize natural gas heating by reducing natural gas rates 5%. Further analysis of energy sales is broken down by utility later in this report.

Energy sales are driven by weather for both the electric and natural gas utilities. 2015 started out very warm with very little winter and resulted in low energy consumption, therefore revenue was down for the electric & gas utilities. Sales increased late in the year with arrival of some colder temperatures and ended the year up 0.25% for electricity and down 9% for gas.

Natural gas marketing and fuel switching efforts to minimize future Tier 2 power purchases and provide the lowest cost energy options for our customers resulted in 62 rebates totaling \$110,600 paid of the \$250,000 combined budget, \$45,500 of which were fuel switching projects.

Light fund conservation projects paid \$263,600 of the \$283,233 budgeted. \$12,800 of which was low income projects, and \$6,050 in fuel switching rebates. \$178,857 was reimbursed by BPA in calendar year 2015. Due to the timing of when projects are completed, paid and finally reimbursed by BPA annual numbers vary but stay within the overall budget.

LOOKING AHEAD

A Request for Proposals for natural gas asset management services process will be completed in 2016. This is a critical service to keep natural gas flowing to our gate at the lowest possible costs.

Bonneville Power Administration is beginning a new rate case for power delivery beginning October 2017. We have completed our forecast already and will be watching the outcome of this process.

Budget formation including cost of service analysis for both light and gas funds will be completed for 2017-2018 in the summer of 2016.

The multi-year, multi-million dollar project of building a new distribution substation on Helena Avenue will be completed this year with full commissioning and energization in the first quarter of 2016. This will add reliability to the distribution system and serve our system growth well into the future.

Expanding the renewable energy park generation facility and pursuing grant opportunities for further expansion will continue. Marketing the generation output and education of renewable energy options are a priority.

Energy Efficiency and Conservation Strategy objectives will be prioritized and a plan to achieve them created.

Council will need to make a decision before September 30, 2016 on where we source of our Tier 2 power from for the period October 2019 to September 2024 and beyond. Staff has a power supply planning consultant hired to help with presenting options, rate impacts of each option, a community survey, town hall meetings and presenting findings to the Utility Advisory Committee and Council. This is a multi-million dollar multiyear decision that affects all our customers. We look forward to working on this and assisting Council with this important decision this year.

ENERGY SALES STATISTICS

WEATHER

Heating degree days (HDD) are an objective record of weather conditions. Much like the magnitude level of earthquakes, a small increase in degree days has a profound impact on energy consumption. In the first quarter of 2015 we had 2,295 HDD's compared to the average of 2,785 and it reduced our overall energy consumption. 2015 ended with 5,739 HDD's compared to 6,293 HDD's for 2014 and 6,527 HDD's for the five year average. This reduced our overall energy consumption for the year.

We closely follow temperature forecasts for the natural gas utility as we need to nominate natural gas into the pipeline in advance to match our daily burn rate. A recent example of this weather impact is looking back to December 23, 2015. That day had a high of 31°F and a low of 15°F for a total of 42 HDD's. New Year's Eve had a high of 14°F and a low of 5°F below zero for a total of 61 HDD's. 19 additional heating degree days increased our City's natural gas consumption 33% comparing those two days. On an annual basis weather is the single largest factor in overall energy consumption for both the light and natural gas utilities.

LIGHT FUND

97 new services were connected in 2015 bringing the total actively billing meters to 9,457. Commodity sales that started the year down 2% ended the year at 198,603,444 kWh nearly the same as 2014. Revenue ended the year up 5.5% reflecting the 5.1% rate increase effective January 1, 2015. Residential rates were restructured to start at \$0.0626 per kWh for the first 600 kWh per billing cycle then increase to \$0.0680 for all consumption above 600 kWh. This was an effort to send a price signal reflecting the increased costs of Tier 2 power while minimizing the impact of a rate increase to as many customers a possible.

GAS FUND

62 new services were connected in 2015 bringing the total actively billing meters to 4,550. Commodity sales that started the year down 12% due to a warm winter ended the year at 6,572,337 Ccf down 9% from 2014. Revenue ended the year down 13% reflecting the 19% reduction in natural gas costs and reduced unit sales. The rate change effective January 1, 2015 dropped residential rates 5%. This was accomplished by restructured residential rates to a declining block design or reducing the cost for consumption above 15 Ccf and lowering the fixed monthly customer charge. This was the opposite design of the electric rates in an effort to encourage natural gas space heating, discourage seasonal disconnects and minimize the future increased costs of Tier 2 power purchases for all City customers.

The City's risk management strategy for purchasing natural gas has been to hedge approximately 50% of its November-March burn in firm forward contracts. Typically we purchase a portion of the winter supply a couple years out to guard against sudden spikes. The natural gas market has/is falling due to oversupply and we are not locked in very far out today.

The balance of our annual supply consists of gas daily market purchases and storage capacity. Dollar cost averaging of four 500/day Nov-Mar firm forward contracts and least cost basin gas daily supply has provided the best weighted average cost of gas and an acceptable level of risk for our customers.

This year we will be doing a Request for Proposals for natural gas asset management services. The City has contracted for nomination, balancing and optimization opportunities with our long term natural gas transportation contracts for over 14 years to reduce staff time and provide reliable delivery of our natural gas on Williams Northwest Pipeline system. Asset management services works in conjunction with the City purchasing natural gas. A new product will be used in the upcoming years to enable more competitive pricing offers for contracted natural gas purchases. We hope to further reduce our retail natural gas rates as a result of this new product.

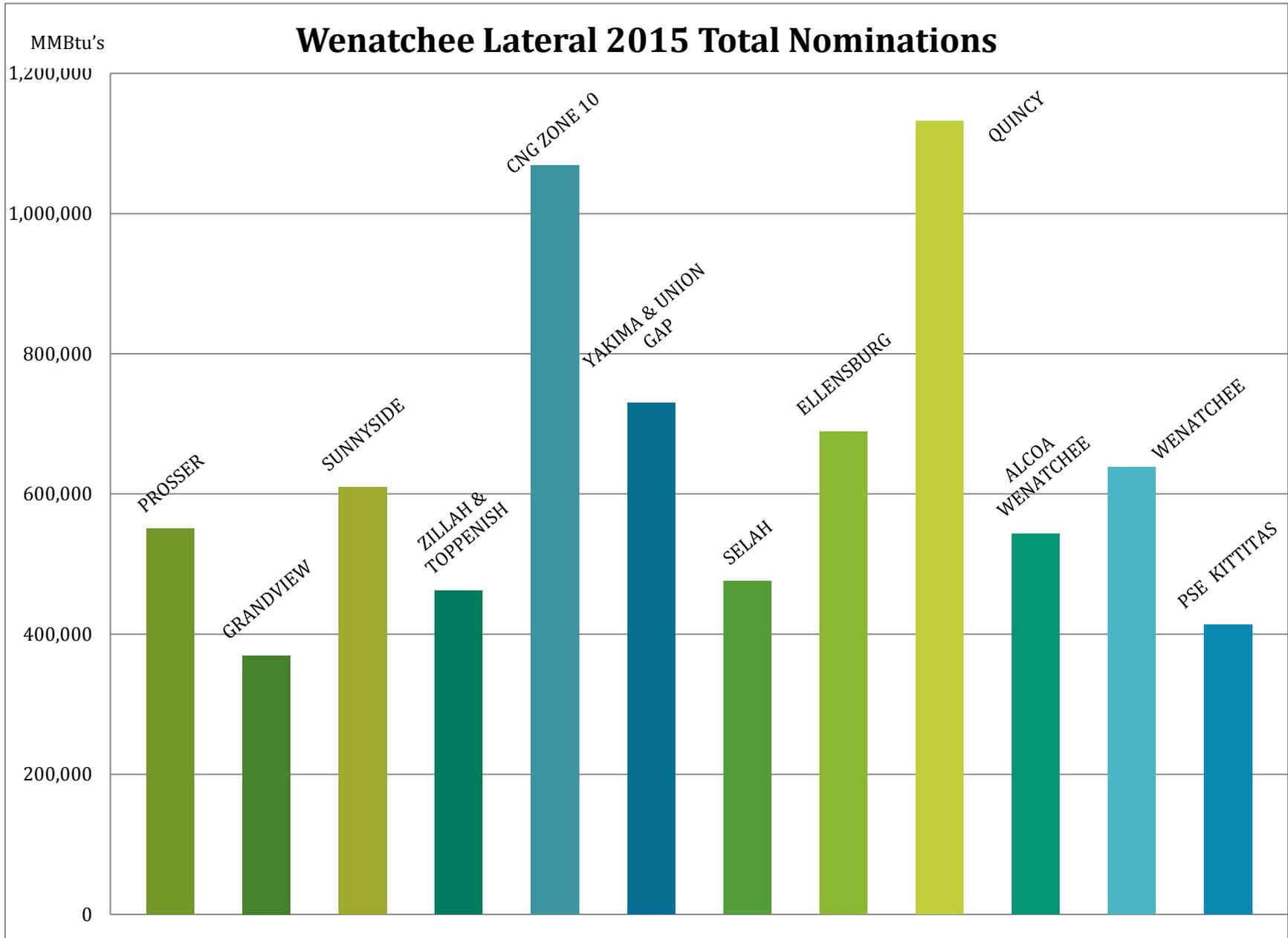
Natural gas costs began 2015 at lower levels than 2014 then dropped to the lowest levels seen since 1992. Wholesale natural gas costs are now at an all-time low. Retail natural gas rates are based on a fixed distribution charge set by Council plus the cost of gas purchased and utility taxes. Retail rates directly reflect changes in wholesale natural gas costs however, they lag behind current lower natural gas costs due to firm purchases made at higher prices. Retail rates dropped in fourth quarter of 2015 compared to 2014 and will drop further in 2016 as the higher priced supply contracts expire.

The following chart is provided to illustrate how Ellensburg compares to other delivery points on the Wenatchee Lateral of Williams Northwest Pipeline system.

Chart Notes:

CNG Zone 10 is an area between the start of the lateral at Plymouth Washington and Zillah Washington in which Cascade Natural Gas has several small delivery points directly connected to the lateral. Rather than try and specify how much goes to which one they simply group those together and nominate it as a single point.

Quincy is at the very end of the lateral and serves several large food processors that operate year around.



ENERGY EFFICIENCY AND CONSERVATION STRATEGY

Based on the comments provided at the June Utility Advisory Committee meeting and further guidance received from councilmembers Scheffer and Lillquist, staff prepared a “Strategy Template” that includes the column titles in the draft document shared at the June 2015 meeting and additional column titles from the [Decision Template](#) and [Action Plan Template](#) appendices that were included in the EECS.

Based on direction from the City Manager, Energy Services, Community Development, and Public Works staff are preparing a “Strategy Template” for each of the 56 sample strategies included in the EECS. This is a significant interdepartmental staff effort that will take several months to complete. The City Manager plans to seek guidance from the City Council on EECS priorities to be included in the 2017/2018 biennial budget at the March 2016 City Council retreat.

BPA ENERGY CONSERVATION PROGRAM

There were 23 projects completed in CY 2015 eligible for BPA reimbursement of \$153,542

- 4 Low Income Window Projects
- 1 Weatherization Project
- 2 Commercial Refrigeration Upgrades
- 18 Commercial Lighting Upgrades

For the two year BPA rate period ending September 30, 2015 our customers completed 96 separate projects, were paid a total of \$403,203 and BPA calculated the total energy savings at 1,411,096 kWh¹

Conservation funding from BPA for the period of October 1, 2015 through September 30, 2017 has been assigned to utilities with Ellensburg receiving \$509,941 up from the \$466,942 in the last budget cycle. We did not submit a few projects at the end of BPA’s budget cycle so those funds in the amount of \$11,157 will roll forward into the next cycle for a total of \$521,099.

BPA is changing programs going forward reducing incentives for low energy saving measures such as insulation as well as eliminating window replacements altogether. Instead they are shifting their efforts to maximize energy savings in the commercial sector. LED lighting fixtures and lamps continue to improve and have dropped more in price. Commercial lighting projects continue to be popular as more customers discover the quality light of LED’s. A gas station canopy lighting program that is available for a limited time and pays a higher incentive to replace metal halide canopy lighting continues until March of 2016. Three gas stations completed those retrofits last year.

Energy Efficiency is at the heart of the Northwest Power and Conservation Council’s Power Plans. The Sixth Plan was published in 2010 and the Seventh Plan will be completed in 2016. A recent preliminary assessment of potential energy efficiency² shows that the region could gain about 5,100 average megawatts over the next 20 years; about 2,700 of that costs less than \$40 per megawatt hour. Two other factors influence the size of the remaining conservation potential of the region. Regional conservation programs are forecast to achieve over 1600 aMW of savings between the adoption of the Sixth Plan in 2010 and the start of the Seventh Plan in 2016. In addition, recently adopted federal standards and state buildings codes

are forecast to capture about 1400 aMW of savings from 2016 through 2035. Both of these factors contribute to lower load forecasts in the Seventh Plan.

According to the Sixth Plan, Northwest population will increase from about 13 million today to 16.7 million by 2030, and load (the ongoing power requirement) will increase from about 21,000 average megawatts today to about 28,000 average megawatts by 2030, an increase of about 7,000 average megawatts overall. These numbers will be update this year in the Seventh Plan.

TIER 2 POWER SUPPLY DECISION

As part of the City's 2016 Tier 2 supply decision process, a consultant has been retained to perform:

1. A potential study for electrical energy conservation, fuel switching from electric to natural gas, distributed generation,
2. A summary of the advantages, disadvantages, estimated costs and rate impacts of expanding the City's Renewable Energy Park and other renewable and non-renewable generation options,
3. A summary of the advantages, disadvantages, estimated costs and rate impacts of Tier 2 power supply options, and
4. Development of a community survey using SurveyMonkey® and presentations at two town hall meetings to seek citizen input on the City's next Tier 2 power supply decision.

2015 was our second year of receiving 1MW of Tier 2 power. It was committed to in 2011 as part of our energy forecast done by BPA. Since that time our overall load has not grown, instead due to weather and other variables it has gone down somewhat. Due to our flat load growth BPA is remarketing more of our 1MW of Tier 2 than we are receiving which increases the City's net cost to about \$70 per MW compared to our \$35 per MW Tier 1 power. In October of 2017 a second MW of Tier 2 committed to in 2012 will begin to be charged to the City. The forecast completed December 2015 for the BP18 rate period indicates will not need any of the second MW of Tier 2 purchased further increasing the net cost of what Tier 2 we actually take delivery of. While we are conserving energy and installing additional solar capacity it compounds the cost problem of Tier 2 supply under the rigid Tiered Rate Methodology power supply contract with BPA.

Footnotes;

1. BPA Reimbursement Invoice Summary Statements
2. Northwest Power and Conservation Council March 3, 2015 Guidance on Conservation Supply Curves

RENEWABLE ENERGY PARK

Community Solar Project

A consultant was hired to investigate possible uses for the SmartGrid wind turbine foundations to demonstrate new solar technologies. Their report was provided to the Utility Advisory Committee at the January 2015 meeting. The conclusion of the committee was although there are improvements in efficiencies and reductions in costs of solar equipment available today compared to when the Community Solar project was built, a clear benefit of re-purposing the foundations does not exist.

Amendments to the community solar participants' agreements were authorized by Council in Resolution 2015-07 April 6, 2015 with the goal of cleaning up the unintended issues in the long term agreements. The options were; 1) stay in the program until the original contribution was reimbursed and terminate the agreement, 2) be reimbursed immediately and terminate the agreement or 3) donate the remaining balance of the contribution to the renewable energy education and maintenance fund and terminate the agreement. A total of 78 participants were on record of which 72 responded to our request. 46 contributors chose to remain in the program, 22 cashed out and 3 donated their equity to the renewable energy education and maintenance designated cash account.

On July 6th a Voluntary Renewable Energy Rate was created in Ordinance 4706 to market the output of the Community Solar facility. This was to provide a self-funding mechanism to provide renewable energy education and maintain the solar facility. An initial marketing effort has resulted in 18 – 100 kWh units/month of renewable energy and 4 units/month of non-energy donations in addition to \$50 of one time donations for a total revenue of \$950 in 4 months. While this is only 6 months into the new rate offering, it reflects customers support renewable energy, but there may be a limit to what they are willing to pay for it. Marketing expenses for 2015 totaled a little over \$1,000.

July 21, 2015 Council authorized paying the Community Solar participants the State Renewable Energy Cost Recovery Credit. In August the total credits estimated to be paid to 21 net metered customers and 46 Community Solar participants reached the State program \$100,000 budget cap. A moratorium was put on new net metered customers until staff received guidance from the Utility Advisory Committee (UAC) and Council. That guidance was provided at the December 21, 2015 UAC meeting. A revised Customer Generator Net Metering Interconnection Standard, draft Ordinance to reflect changes needed in City Code and a Resolution was created to reflect the UAC's policy recommendations to Council. Those items were presented to the UAC at the January 21, 2016 meeting and recommended to Council for their approval February 1, 2016.

Council also directed staff to proceed with design and competitive bidding for expanding the solar generating facility a minimum of 75 kW and approved a supplemental budget request in the amount of \$500,000 to fund it. Staff did the design work in house, advertised Solar Expansion Bid Call 2015-31 which opened November 18th. The bid was structured for a base bid amount of 72-75 kW of new solar generation capacity and four alternate schedules. Schedule 1 reconfigured and replaced the aging inverters in the original community solar projects. Schedules 2 through 4 were for additional capacity in approximately 36 kW increments. At \$2.54 per watt the Ellensburg Solar bid was the lowest cost per watt of installed capacity. By comparison the cost of the Community Solar project built 2006 – 2010 was \$7.70 per watt. The construction contract was awarded for the Base Bid and Schedule 4 which will add 180 kW of solar generating capacity at the January 4, 2016 Council meeting.

Central Washington University created an Institute for Integrated Energy Studies program. On November 16, 2015 Council authorized staff to work with the program manager to assist in applying for the State of Washington Clean Energy Fund Round 2 Grant application for possible further expansion of solar generating facilities. Applications with preliminary concepts are due February 12, 2016.

NATURAL GAS MARKETING PLAN SUMMARY

Conservation funding for our natural gas customers is derived from retail rates and was focused on natural gas marketing efforts, fuel switching and incentives for developers to install natural gas appliances in new construction homes in 2015. A City Council decision on whether to continue this effort for 2016 will set the path for 2016 efforts going forward. This has been an effort to help minimize future more expensive Tier 2 power purchases by converting electric heating appliances to natural gas and promote the least cost energy option for our customers.

Locally natural gas has a 50% market share of new home construction in part due to gas equipment's higher installation costs for the developer. Of the 62 new homes built in 2015, 30 were all electric and 32 were a combination gas & electric. New gas services were installed and existing customers installed more appliances as a result of the Fuel Switching rebate program. 30 existing homes added new natural gas service lines/appliances' and 14 customers who had natural gas added additional appliances.

There were 62 rebates applied for as of December 15, 2015.

- New construction rebates \$68,100
- Fuel Switching rebates \$42,500

The natural gas utility has installed 226 new services since 2010 yet the number of meters actively billing has been on a downward trend. Active residential customer count at the start of 2014 was 3,828. 44 new services were installed in 2014 but at the end of the year the actively billing dropped by 75 to 3,753 residential services. The marketing efforts reversed that trend increasing the number of actively billing residential meters by 55 to 3,808 December 31, 2015. Interest in fuel switching is increasing nearly doubling between 2014 and 2015 and nearly 100% of rebates went for the higher efficiency appliances.

A New Opportunity

HopeSource together with the Department of Ecology have provided incentives to replace older non-certified wood stoves with cleaner burning certified wood stoves. They have had a successful program for a number of years and are interested to see if the City would be interested in providing incentives to replace old wood stoves with natural gas free standing fireplaces. It would help both the air quality in the valley and the natural gas utility if Council wants to pursue this opportunity.

Shan Rowbotham

Energy Services Power & Gas Manager

February 18, 2015

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