



April 17, 2017

Ms. Georganne Myers
Public Utilities Specialist
Western Area Power Administration
Upper Great Plains Region
2900 4th Ave N
Billings, MT 59101

Subject: Submittal of the City of South Sioux City's 2017 Integrated Resource Plan

Dear Ms. Myers:

Pursuant to the requirements of 10 CFR Part 205 and Western Area Power Administration's Energy Planning and Management Program ("EPAMP"), enclosed please find a copy of the City of South Sioux City's ("the City's") 2017 Integrated Resource Plan ("IRP"). This document reflects the City's first IRP; the City previously fulfilled its EPAMP requirement through its participation in the IRP process conducted by the Nebraska Public Power District.

If you have any questions regarding this submittal, please contact me at (402) 494-7517. An electronic copy of this IRP has also been provided to you via e-mail.

Sincerely,

A handwritten signature in blue ink, appearing to read "Lance Hedquist".

Lance Hedquist
City Administrator



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2017 Integrated Resource Plan

Prepared for:

City of South Sioux City
South Sioux City, Nebraska

April 2017

Prepared by:

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1. Overview on the City of South Sioux City

1.1. Background

The City of South Sioux City (“the City”) is a municipal system located in Dakota County, Nebraska, that provides retail electric services to customers located within its city limits. The City’s service area covers seven square miles and includes approximately 5,300 residential, commercial, industrial, and municipal electric customers. The City’s distribution system consists of a 12 kV network that is served by seven 69 kV substations located throughout the City. The City’s system interconnects to the Nebraska Public Power District’s (“NPPD’s”) statewide transmission grid. The distribution system is owned and managed by the City; however, NPPD operates and maintains the local system.

The City does not own any generation facility but has received wholesale electric service for the last 15-years through an all-requirements contract with the Nebraska Public Power District (“NPPD”). As discussed in more detail below, in 2014 the City elected to terminate its agreement with NPPD and seek other power supply options. As a result, the City has entered into several contractual arrangements with other providers for the purchase of capacity and energy from several renewable and thermal resources.

1.2. Overview of the City’s IRP Requirements

The City previously participated in NPPD’s Integrated Resource Planning (“IRP”) process and complied with Western Area Power Authority’s (“Western’s”) Energy Planning and Management Program (“EPAMP”) requirements through that process. Because the City is no longer a full-requirement customer of NPPD and will no longer be included in NPPD’s IRP process; the City will now be responsible for conducting its own IRP process. Under the requirements of the EPAMP, customers of Western who purchase firm capacity and/or energy under a long term firm power supply contract are required to prepare an IRP every five years that meet the objectives of Section 114 of the Energy Policy Act of 1992 (“the EAct”)¹. This IRP was prepared to comply with those requirements and to be used as a planning document for the City. This is the City’s first IRP and covers the 2017 through 2021 planning period.

1.3. Purpose, Goals, and Objectives of the IRP

The purpose of this IRP is to develop a resource plan that meets the City's power supply requirements while also working towards meeting several specific goals developed by the City. The City’s goals and objectives for this IRP fall into four specific areas:

Resource Diversity:

- Develop a portfolio of resources that includes a diverse mix of fuel and technology types.
- Evaluate a range of supply and demand resources
- Include renewable resources in the portfolio if they offer specific value to the City.

¹ 10 CFR Chapter III, Section 905.1.

This objective will be measured based on the diversity of the fuel supply mix; this objective will be met when the City's portfolio is being sourced by resources relying on a range of fuel types.

Minimize Costs:

- Evaluate and select resources that will reduce and stabilize retail rates for customers.
- Develop a portfolio of resources that include a diverse mix of fuel and technology types.
- Obtain resources through a competitive procurement process that provides for price discovery and flexibility in pricing options.

This objective will be measured based on retail energy prices; this objective will be met when the City's retail energy price is lower than it was in 2016.

Clean & Renewable Resources:

- Include competitively priced clean or renewable resources in the portfolio that will minimize environmental impacts.
- Consider renewable resources developed locally (within the City or within Nebraska) that may offer value to the City.

This objective will be measured based on the City's energy purchases from clean or renewable resources; this objective will be met when the City's portfolio contains clean or renewable resources in an amount equal to the state average.

Public Outreach:

- Gain an understanding of the resource preferences of the City's customers and incorporate as applicable.

This objective will be measured based on the opportunities the customers have to provide input to the planning process; this objective will be met when the City incorporates the feedback received from its customers.

As further discussed below, an important component of this IRP is the implementation plans. The City has developed these implementation plans to support and work towards meeting the goals of this IRP.

2. Customer Requirements

2.1. Historical Consumption

The City’s peak demand and energy requirements have been fairly constant over the last five years, with peak demand and energy consistently about 40 MW and 220,000 MWh, respectively. The system can be either winter or summer peaking, with seasonal demand driven by extreme seasonal weather. Historical seasonal peak demand is aligned with heating degree days (“HDD”) and cooling degree days (“CDD”) for the region². In year 2015, when the City’s summer and winter peak demand were almost identical, summer and winter HDD and CDD were near their season normal degree days.

Table 1 provided below presents the City’s peak demand and energy consumption over the last five years.

Table 1
Historic Seasonal Peak and Energy Consumption³

	Summer Peak (MW)	Percent Change	Winter Peak (MW)	Percent Change	Summer Energy (MWh)	Winter Energy (MWh)	Annual Energy (MWh)	Percent Change	Load Factor
2012	39,191.20		37,212.70		104,287	103,864	208,096		60.60%
2013	34,204.70	-12.72%	36,754.40	-1.23%	99,127	104,431	203,494	-2.21%	63.20%
2014	37,073.30	8.39%	39,217.50	6.70%	101,652	111,491	213,143	4.74%	62.00%
2015	39,808.50	7.38%	40,123.30	2.31%	111,941	112,630	224,571	5.36%	63.90%
2016	39,121.20	-1.73%	38,295.90	-4.55%	112,566	111,298	223,863	-0.31%	65.30%

Source: City of South Sioux City

2.2. Seasonal Load Profile

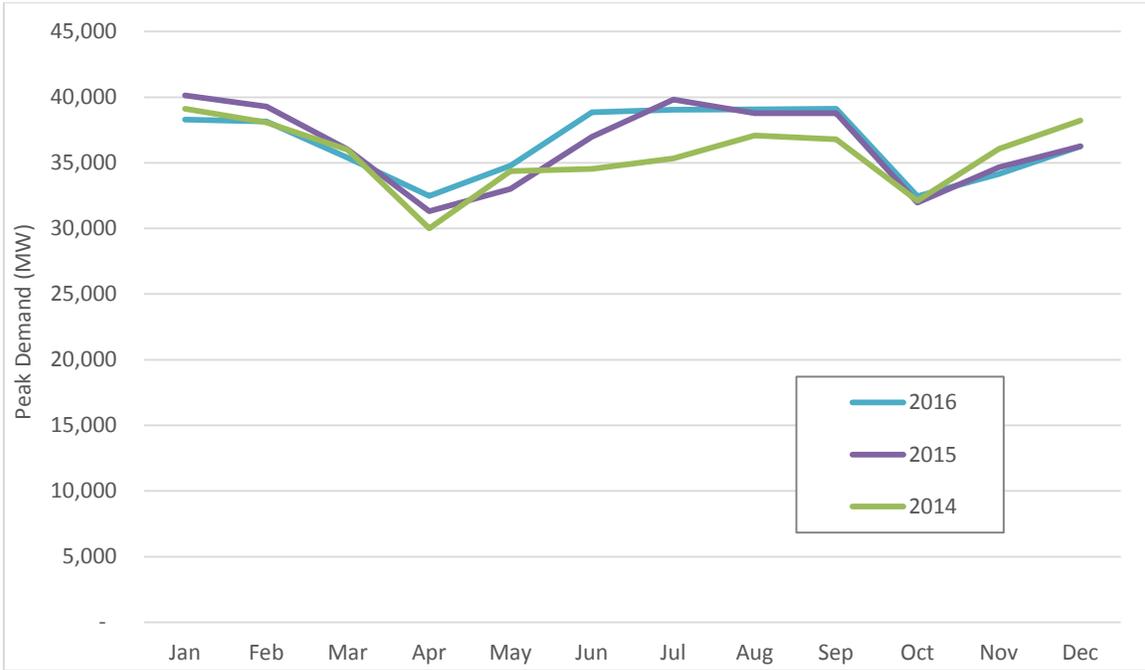
As part of the forecasting process, the City reviewed its monthly peak demand and energy requirements and hourly load duration curve for the last five years to identify any specific anomalies. Apart from known demand growth and seasonal variations due to weather, the City’s consumption has been fairly consistent over the last several years. The monthly load is a typical pattern with peaks occurring in either the winter or summer with slightly lower demand occurring in the spring and fall seasons. Figure 1 provides the monthly peak pattern for the last three years.

The load duration curve appears to be a typical shape with peak demand consistently between 37 MW and 40 MW and minimum demand consistently at approximately 13 MW. Figure 2 provides the City’s hourly load duration curve. Interestingly, when the City experience either summer or winter extreme seasonal temperatures, the highest 20-50 hours are driven by those temperatures, implying that heating and cooling loads are driving peak demand on the system. In 2016, with an above average number of cooling degree days, the highest 150 demand hours were set during the summer months.

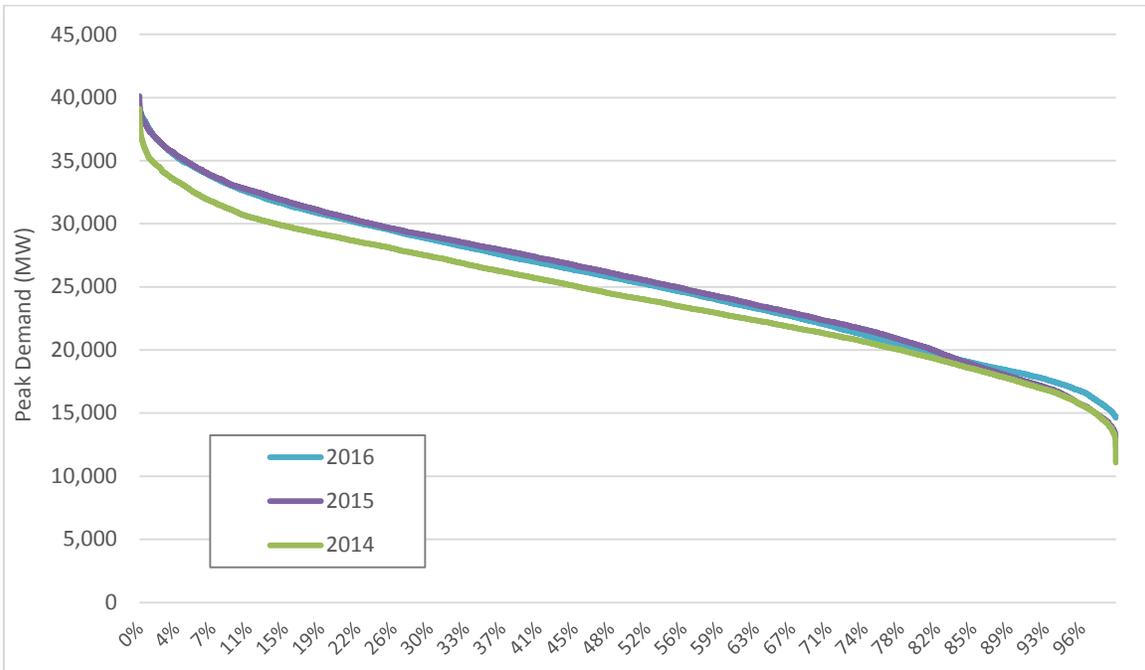
² HDD and CDD data based on Sioux Gateway Airport.

³ For analysis purposes, summer months are April-September and winter months are October-March.

**Figure 1
Monthly Load Shape**



**Figure 2
Load Duration Curve**



2.3. Forecasting Process

The City recently began prepared an annual energy and peak demand forecast for the purpose of evaluating power supply options and for preparing this IRP. The City’s load forecast was prepared in two steps. First, based on historical information, the City forecasts the demand and energy requirements of its existing customers using a time series methodology that includes over 5-years of hourly metered consumption data. The City also conducted a trending analyses to identify any unusual patterns or anomalies that may impact the forecast process. As discussed above, this analysis revealed the linkage between extreme seasonal temperature and seasonal peak. Existing customer load growth is projected to be about 1.1 percent per year over the 2017-2026 forecast period, in line with historical growth and reflecting the positive outlook for the regional economy.

Next, the City prepared a projection of planned incremental load. The City is working closely with several industrial and commercial customers that will add incremental load over the next 24-months. This incremental load, representing either new or an expansion of existing customer load, represent 6,000 kW. The City has spent a significant amount of time understanding the requirements of the incremental load and is very certain this will materialize. Based on the City’s understanding of the nature of the load, this is not projected to increase over time.

Table 2 provides the City’s projected capacity requirements for the existing, incremental, and total demand. Included on the table is the new commercial and industrial customers and the anticipated demand requirements. Table 3 provides the annual peak demand and energy forecast for the 2016-2026 period. The incremental energy requirements were estimated based on developing a representative hourly load profile for each customer, based on the City’s understanding of their anticipated operations.

Table 2
Existing and Planned Demand Growth (kW)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Existing Demand	39,121	39,512	39,907	40,306	40,709	41,117	41,528	41,943	42,362	42,786	43,214
Incremental Demand											
Big Ox		2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
BPI Base Load		400	400	400	400	400	400	400	400	400	400
Great West Casualty		500	500	500	500	500	500	500	500	500	500
BPI Freezer			2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Project Joint			750	750	750	750	750	750	750	750	750
Incremental Load		3,400	6,150	6,150	6,150	6,150	6,150	6,150	6,150	6,150	6,150
Total Peak Demand	39,121	42,912	46,057	46,456	46,859	47,267	47,678	48,093	48,512	48,936	49,364

Source: City of South Sioux City

Table 3
Peak Demand and Energy Forecast

	Annual Peak Demand (kW)	Percent Change	Annual Energy (MWh)	Percent Change	Load Factor
2016	39,121		223,863		65%
2017	42,951	9.8%	234,874	4.9%	62%
2018	46,136	7.4%	250,101	6.5%	62%
2019	46,576	1.0%	251,916	0.7%	62%
2020	47,021	1.0%	253,713	0.7%	62%
2021	47,471	1.0%	255,523	0.7%	61%
2022	47,925	1.0%	257,345	0.7%	61%
2023	48,385	1.0%	259,181	0.7%	61%
2024	48,849	1.0%	261,030	0.7%	61%
2025	49,319	1.0%	262,892	0.7%	61%
2026	49,794	1.0%	264,767	0.7%	61%

3. Existing Supply-Side Resources

The City is in the process of developing a diverse portfolio of generation resources that is designed to stabilize electric rates through fixed-priced contracts. The generation supply portfolio includes purchases from a variety of resources under short, mid, and long-term power purchase agreements (“PPAs”). The resources include purchases from utilities, market purchases, and the development of resources within the City’s service area. As further discussed below, the City has recently begun the termination process of its all-requirements services contract with NPPD and has begun to enter into several power purchase agreements while continuing to explore other power supply options. Provided below is a summary of the City’s existing resources. These are each described in more detail below.

**Table 4
Summary of Existing Power Supply Resources**

Resource Name	Primary Fuel	Rated Capacity (MW)	Term of Purchase
NPPD Partial Requirements Contract	Coal/Nuclear	17.2 to 34.4	Capacity value decreases through contract termination in 2020
Capacity Purchase from LES	N/A	4.0 to 29.0	Capacity value increases through contract termination in 2021
AEPEP Fixed Energy Purchase	Market	2.4 to 14.6	Fixed monthly peak and off-peak energy purchase terminating in 2021
SSC Solar Facility	Solar	2.25	20-year fixed price contract
Green Star Gasification	Biomass	3.0	20-year fixed price contract
Interruptible Load Contract	N/A	5.0	5 MW of capacity, decreasing over the next 4-years due to customer requirements
Western Preference Power	Hydro	5.0	10-year contract with purchases varying monthly

3.1. Partial Requirements Contract with NPPD

In 2002 the City entered into a 20-year all-requirements wholesale contract with NPPD. The contract contains an early termination clause, and in 2014 the City notified NPPD that it intended to terminate its contract and begin the ramp down of its wholesale purchase in 2017. The City elected to end its agreement with NPPD due to significant increases in costs over the last several years, uncertainty related to coal generation, and the abundant supply of competitively priced renewable resources and market-based options. As a result, beginning in January 2017 the City began purchasing partial requirements service from NPPD. Based on the terms of the contract, the City will purchase a Base Monthly Demand Obligation (“BMDO”) and Base Monthly Energy Obligation (“BMEO”) during the transition period. The BMDO and BMEO was determined based on the average of the maximum monthly demand and total energy delivered for the corresponding month over the three previous calendar years. For example, in January and August, historically two peak months for the City, the BMDO for 2017 is the simple average of the last three January and August purchases from NPPD, which is approximately 34.4 MW and 33.7 MW, respectively.

During the transition period, the City will reduce its NPPD purchase each year based on a schedule. In 2018 it will be set at 70 percent of the 2017 BMDO. Thereafter, the ramp down rate is ambiguous and is being litigated by the several cities that have decided to leave the NPPD system. The ramp down rate will be set at either 40 percent or 60 percent of the 2017 value for 2019, and either 10 percent or 50 percent of the 2017 value for 2020. This is the largest uncertainty in the City's IRP.

3.2. Capacity Purchase from Lincoln Electric System

The City entered into a PPA for the purchase capacity from Lincoln Electric System ("LES"), a publicly owned power utility serving the City of Lincoln NE. Under the terms of the agreement, the unit-firm capacity will be provided from LES's existing J Street and Rokeby Generation Stations. The term of the purchase is 2017-2021 in an increasing amount, which was designed to account for anticipated load growth and complement the ramp-down of the NPPD contract as discussed above. The purchase amounts are for 4.0 MW in 2017, 16 MW in 2018, 24 MW in 2019, 28 MW in 2020, and 29 MW in 2021. As further discussed below, the City is currently evaluating the economics of an extension of this purchase.

3.1. AEPEP Fixed Energy Purchase

In 2015 the City entered into a fixed-price, fixed shape contract with AEP Energy Partners ("AEPEP"). The contract provides fixed monthly peak and off-peak purchases that were designed to account for anticipated load growth and the ramp-down of the NPPD contract as discussed above. The contract provides a competitive fixed price throughout the 2017-2020 term. The purpose of the purchase is to stabilize energy prices for the customers by mitigating market price volatility.

3.2. Solar City Solar Facility

In 2015 the City held a solicitation for the purchase of renewable energy under fixed priced long-term contract from renewable resources. After analyzing several viable proposals, in late 2015 the City entered into a 20-year PPA with Solar City for the purchase of output from a 2.25 MW photovoltaic solar facility to be developed on a City-owned parcel. The project reached commercial operation in January 2017.

3.3. Green Star Gasification Project

In 2016 the City received a proposal from Green Star Energy for the development of a 3.0 MW to be located in the City's Roth Industrial Park. The project will rely on a rotary kiln gasification system that will process the City's biomass and municipal solid waste. The project will also operate on natural gas for backup purposes. The bioenergy facility qualifies for state grant funding from the Nebraska Department of Environmental Quality. Under the terms of the agreement, the City will purchase the energy generated from the facility under a fixed priced contract. The project has an expected commercial operation date of July 1, 2017. Green Star has a plan to expand this facility in phases. Under the terms of the agreement, the City has the right of first refusal to purchase any incremental output.

3.4. Interruptible Capacity Contract

The City has an agreement with its largest industrial customer, Beef Products Inc. (“BPI”) for the ability to interrupt a portion of the customer’s load for system peak shaving purposes. Under the terms of the agreement, the City can periodically and temporarily interrupt the load in an amount up to 5.0 MW. The agreement was developed to assist the City to manage its seasonal peak demand thereby minimizing demand charges under the NPPD contract. The City views this as a valuable resource and plans to maintaining this agreement in the future.

3.5. Western Area Power Administration – Upper Great Plains Region

The City receives firm hydroelectric capacity and energy from Western from its Pick-Sloan Missouri Basin Program. This power has historically been delivered to the City through arrangements between Western and NPPD, whereby NPPD was the Western allocation agent. Although no longer an all-requirements participant in NPPD beginning in 2017, the City is seeking to continue to receive firm capacity and energy purchases directly from Western. The City previously received 5.0 MW from Western.

4. Existing Demand-Side Resources

4.1. City-Sponsored Programs

As a wholesale electric utility of NPPD, the City participates in NPPD's EnergyWise program. The program offers a range of energy efficiency initiatives that are designed for residential and business customers. The City participates in three specific incentive programs, 1) Prescriptive Lighting program, 2) Custom Lighting Efficiency program, and 3) Variable Frequency Drives program. A description of these programs are provided below.

- **Prescriptive Lighting** – In this program, incentives are given to customers to swap out old light bulbs for new, energy efficient LED bulbs. The program is exclusively for existing Commercial and Industrial customers and in order to qualify, the customer must have received permanent electric service for 12 consecutive months or more. The incentive values are based on the wattage of the new LED bulbs, with larger wattage bulbs receiving higher incentives. Fluorescent freezer/refrigerator case lighting upgrades, LED Exit signs, occupancy sensors, and PAR 30/38 retrofit kits also receive incentives. Incentives in this program range from \$5 - \$60, depending on the size of the bulb.
- **Custom Lighting Efficiency** – The Custom Lighting Efficiency program is very similar to the Prescriptive Lighting program. It is only available to existing Commercial and Industrial customers who have received permanent electric service for 12 consecutive months or more. In this case however, incentives are provided for lighting upgrades that are not explicitly listed in the guidelines of the Prescriptive Lighting program. All upgrades must use LED bulbs, and must be approved by an Energy Efficiency Consultant prior to the removal of existing lighting equipment. The incentives in the program are calculated by the consultants to meet the lower amount of either the “annual kWh energy savings x \$0.07 per kWh” or “50% of associated costs to complete installation.”
- **Variable Frequency Drives** – This program is available to industrial and large commercial customers within the NPPD and its wholesale utilities' customers. The program applies to drives from 1 to 200 horsepower that operates at a minimum of 2000 hours annually. The system that is controlled must have “significant load diversity that will result in motor speed variation”. The VFD must have automatic speed control, and itself must control centrifugal fans or pumps. New construction HVAC pumps and fans, as well as the replacement of existing VFD's or single phase service is ineligible.

As part of the program, NPPD makes available to each of its retail and wholesale customers a budget to facilitate the conservation measures. The City's allocation of the budget is approximately \$45,000, which is intended to include advertising and engineering software expenses. Based on the customers that have taken advantage of these programs, in 2016 the programs resulted in 35 kW and 2,400 MWh of energy savings.

4.2. State Programs

Although the City has not previously offered its customers specific efficiency programs, energy customers do have access to several a programs through the Nebraska Energy Office (“NEO”) and the Nebraska energy Assistance Network. Several of these programs are briefly described below and detailed information on these and other programs are provided on the NEO’s website.

4.2.1. Weatherization Assistance Program

The State of Nebraska offers a weatherization assistance program to low-income families to make their homes more energy efficient. The weatherization assistance program is a federally funded program and is offered to Nebraskans at no cost. Weatherization services are performed through several non-profit organizations throughout the state; the Northeast Nebraska Community Action Partnership serves the City and several other communities in the area. Information is readily available on the NEO’s website that describes the process, typical improvements, and historical results. The program consists of an energy assessment to evaluate and identify the best combination of measures for reducing total energy consumption in each house. Typical measures include adding additional insulation to the attic, walls, and/or floors; performing an efficiency inspection on furnaces, boilers and water heaters; replace broken glass in windows; and installing door weather-stripping, thresholds, and door sweeps.

4.2.1. Low Interest Energy Loans

The State of Nebraska also offers arrangements for homeowners and other building owners to obtain low interest loans for funding energy efficiency projects. The program, Nebraska Dollar and Energy Saving Loans, is offered statewide by the NEO and the state's lending institutions. Many common home, building, or system energy improvements qualify for financing, including appliance replacement, Heating, ventilation and air conditioning (“HVAC”) projects, building envelope measures, lighting applications, and renewable energy systems. Typical energy improvements and the loan application process is explained in detail on the NEO’s website.

4.2.1. Educational Information

The NEO makes available a significant amount of educational material related to energy efficiency as it relates to new construction, existing structures, appliance selection, HVAC, insulation, lighting, and doors and windows. Many of these energy savings videos and factsheets were prepared by the NEO in association with the University of Nebraska - Lincoln Extension and the Nebraska Energy Assistance Network.

4.3. Energy Efficiency Codes and Requirements

In May 2013 the City adopted the 2009 International Energy Conservation Code of the energy efficiency codes and requirements for all residential and commercial buildings. These requirements include:

- **Chapter 11 of the 2009 Edition International Residential Code (Residential):** The stand-alone residential code contained in this document establishes minimum regulations for one- and two-family dwellings and townhouses. Chapter 11 regulates the energy efficiency for the design and construction of buildings regulated by this code.
- **2009 Edition International Energy Conservation Code (Commercial):** This comprehensive energy conservation code establishes minimum regulations for energy efficient buildings using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new energy efficient designs.

4.4. Conservation Measures Installed in City Facilities

The City has previously taken advantage of state funding opportunities available for energy conservation investments and measures. These are highlighted below:

- In 2010 the City completed several energy efficiency projects in several municipal buildings. The projects were awarded to the City as part of the Energy Efficiency and Conservation Block Grant program, funded through the American Recovery and Reinvestment Act of 2009. The measures include lighting and insulation in nine municipal buildings at a cost of over \$250,000, and are estimated to save over 188.5 MWh per year. These measures include the following:
 - Installation: In one large building, remove existing foam roof insulation and replace with polyisocyanurate insulation for an R-value of 30 to 49.
 - Lighting: In nine building, remove and dispose of numerous 4-lamp T-12 fixtures, magnetic ballasts, and bulbs, and replace with 2-lamp T-8 fixtures, electronic ballasts, and bulbs.
- In 2011 the City participated in the Nebraska Energy Office's Energy Detective program, designed to provide energy education and awareness to fifth grade science students. The energy education program featured an Energy Detective Kit that was designed to provide students and their family practical knowledge on environmental issues and offers tools to increase energy efficiency at home.

As discussed more fully below, energy efficiency and demand-side management programs for the City's retail customers will continually be evaluated and examined for future implementation.

5. Future Resource Requirements

This section of the IRP evaluates the City’s existing capacity resources with respect to its projected demand requirements to determine the timing and need for additional resources. We also discuss uncertainties that may impact the timing and magnitude of resource need. Since the City’s distribution network is within the Southwest Power Pool (“SPP”), the City’s projected resource requirements include the Planning Reserve Margin Requirements of 12 percent⁴ applied to the portion of load served by non-firm resources⁵.

5.1. Base Case

The City has developed a resource outlook that include the expected capacity requirements and existing and planned resources. Based on our analysis, we project the City will require additional capacity in 2020. Provided below in Table 5 is a comparison of the City’s projected resource requirements and existing capacity resources. Figure 3 illustrates the same days in graphic form. As can be seen, the forecast relies on its interruptible load contract to meet peak demand. As an alternative, the City also has access to the SPP wholesale market, where it has evaluated short-term purchases as needed to meet incremental demand beyond the new customer load included in our forecast.

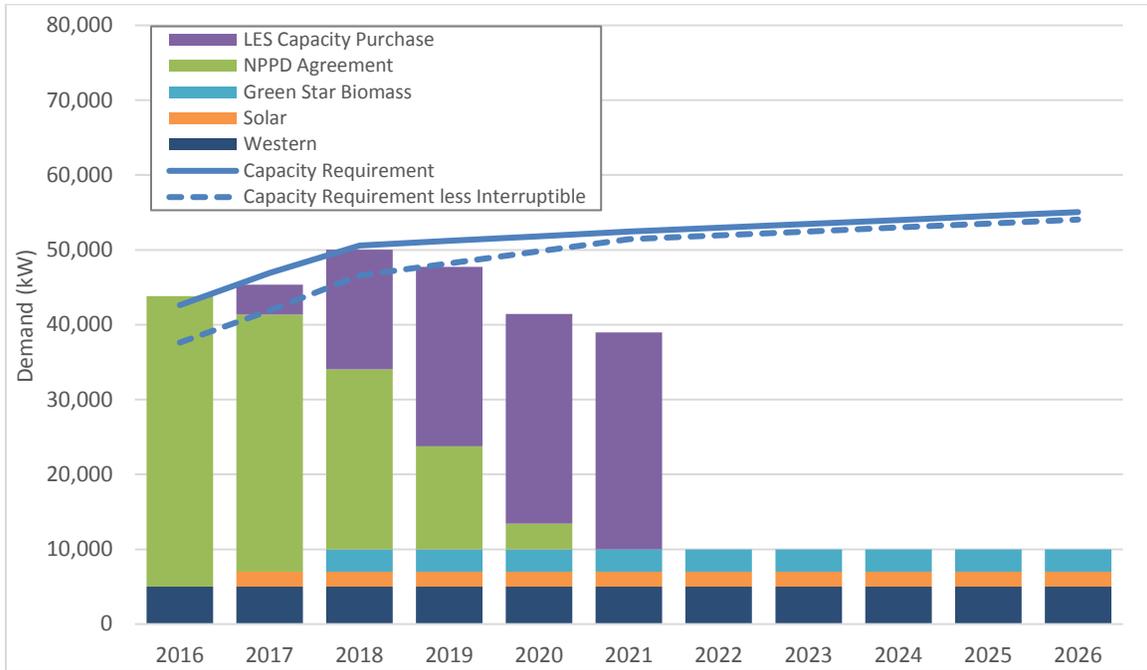
Table 5
Comparison of Peak Requirements and Resources

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Requirements											
Peak Demand	39,121	42,951	46,136	46,576	47,021	47,471	47,925	48,385	48,849	49,319	49,794
Interruptible Load	5,000	5,000	4,000	3,000	2,000	1,000	1,000	1,000	1,000	1,000	1,000
Net Peak Demand	34,121	37,951	42,136	43,576	45,021	46,471	46,925	47,385	47,849	48,319	48,794
Reserve Margin	3,495	3,955	4,457	4,630	4,803	4,977	5,032	5,087	5,143	5,199	5,256
Capacity Requirement	37,616	41,906	46,594	48,206	49,824	51,448	51,957	52,472	52,992	53,518	54,050
Resources											
NPPD	38,809	34,355	24,049	13,742	3,436						
LES Capacity		4,000	16,000	24,000	28,000	29,000					
SSC Solar		2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Green Star Biomass			3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Western	4,992	4,992	4,992	4,992	4,992	4,992	4,992	4,992	4,992	4,992	4,992
Total Resources	43,801	45,347	50,041	47,734	41,428	38,992	9,992	9,992	9,992	9,992	9,992
Surplus/(Deficit)	6,185	3,441	3,447	-472	-8,396	-12,456	-41,965	-42,480	-43,000	-43,526	-44,058

⁴ See SPP’s Resource Adequacy Workbook, Page 12.

⁵ To calculate the Planning Reserve Margin Requirements, we first subtracted the capacity purchase from Western, since this is firm and does not require reserves.

**Figure 3
Comparison of Peak Demand and Resources**



5.1. Uncertainties

There are several specific uncertainties associated with our forecast that may impact the projected supply outlook. However, the City believes any adjustments needed to the resource portfolio can be accomplished through short-term purchases or sales from the SPP wholesale market which would help to minimize costs to customers.

5.1.1. NPPD Ramp-Down Schedule

As previously mentioned, the City is involved in a contract dispute with NPPD over the contract's ramp down schedule. The City believes the ramp down should occur more aggressively in 2019 and 2020, resulting in less capacity and energy being purchased from NPPD. We have incorporated that view in our forecast. Should the outcome of the litigation be in favor of NPPD's position and result in a slower ramp down, the City will have surplus capacity in both years.

5.1.2. Incremental Load

As discussed above, the City is anticipating approximately 6.0 MW of new load in its service area within the next 24 months. If all of this load materializes, the City plans to rely on either its interruptible

resources or incremental capacity purchases from the SPP market. The City is closely monitoring the timing and magnitude of the incremental customer load and its impact on peak requirements.

5.1.3. Green Star Biomass

The City has a contract for the purchase of 3.0 MW from a biomass resources being developed in its service area. While the City believes the project will be developed as planned, the City is closely monitoring the state grant approval process and the expected commercial operation of the resource to mitigate any uncertainties.

6. Future Supply-Side Resource Options

Based on the City's projected need for additional capacity, the City has been proactively soliciting proposals and receiving unsolicited offers for power supply resources from utilities, marketers, and developers in the region. The solicitations have focused on capacity and energy purchases and renewable resources, while the unsolicited proposals received by the City have been for renewable resources being developed in the region. Provided below is a summary of those activities.

6.1. Resource Solicitations

Over the last two years the City has evaluated numerous supply side proposals. For each of the solicitation, and the evaluation of non-solicited proposals, the City has maintained consistent evaluation criteria which includes:

- Availability to meet the City's resource timing needs;
- Reliability of the resources (or portfolio of resources);
- Transmission requirements for delivery (cost and availability);
- Environmental impacts and compliance costs of the resource;
- Total delivered cost of the resource, as compared to current market-based purchases; and
- Customer preferences (e.g., renewable, in-state, etc.)

Provided below is a summary of the City's resource solicitation activity

- Solicitation for Capacity and Energy Resources – In 2014 the City solicited proposal for capacity and energy resources for the 2017-2020 period with the intent to replace the NPPD contract with a fixed price resources. The City received several proposals for supply, and, after several rounds of negotiations, selected AEPEP to provide a shaped fixed-priced energy product (as discussed above).
- Solicitation for Capacity Resources – In 2015 the City solicited proposals for capacity resources for the 2017-2020 period. The purchase was designed to meet the City's obligations in the SPP market. The City received several proposals and, as discussed above, selected a fixed-priced capacity offer from LES for an amount which increases over the purchase period.
- Solicitation for a Community Solar Project – Also in 2015 the City solicited proposals for a utility-scale solar resource to be located on City-owned property. The City received several proposal in response to the solicitation. After careful analysis, the City selected a 2.25 MW project being developed by Solar City on C Avenue. As part of the contract, the resource will also provide an educational opportunity for students in the community.

6.2. Unsolicited Project Proposals

In addition to the above, the City has received approximately ten unsolicited proposals for renewable resources and market-based energy projects. For each, the City has applied the same criteria as above, evaluating how each resource may fit into its existing resource portfolio from a capacity and energy perspective. The evaluation of these resources have resulted in a power purchase agreement with the Green Star Energy biomass project.

6.3. Evaluation of Resources

For each of the solicitations described in Section 6.1, and each of the unsolicited proposals received as discussed in Section 6.2, the City has undertaken a qualitative and quantitative evaluation of each power supply option. The City first evaluates the non-price characteristics of each option based on developer experience, project viability, and contractual requirements. For the City's solicitations, the evaluation was performed using a point system that results in a score for each characteristics based on a range of criteria and requirements. The points are then compared across all projects. For unsolicited proposals, the non-price characteristics are evaluated on a qualitative basis. For the price evaluation, the City prepares a levelized cost analysis forecasting out all costs associated with the supply offer, including transmission charges and congestion costs, as may be applicable. For proposals received as part of a solicitation, the costs of each resource were compared to each other. For unsolicited proposals, the projected cost of the resource option is compared to the City's projection of regional capacity and energy prices.

6.4. Future Resource Solicitations

Based on the possible need for additional capacity beginning as soon as 2019, the City plans to solicit for a medium term (3-5 year) supply of capacity and energy that will meet the City's incremental requirements in addition to the capacity from its existing resources. However, there are at least two uncertainties that the City continues to monitor that will drive the timing of any incremental resource need. As more fully discussed above, these include 1) the amount of planned industrial load that materializes within the City, and 2) the outcome of a contract dispute with NPPD over the existing contract's ramp down schedule. The City will continue to monitor these two specific uncertainties and act accordingly.

7. Future Demand-Side Options

7.1. Overview of Load Shape Objectives of DSM Programs

Demand Side Management (“DSM”) options are evaluated as a means of deferring capacity acquisitions. DSM options modify the end use load shape. Provided below is a brief description of six industry accepted load shape objectives as developed by the Electric Power Research Institute (“EPRI”).

Load Shape Objective	Description
Strategic Load Growth	Strategic Load Growth involves promoting increase in loads of any kind. This is typically for utilities with surplus low cost base load generation.
Peak Clipping	Peak Clipping is the reduction of system peak loads in order to reduce the reliance on peaking units with high fuel costs. Air conditioning load cycling is an example of a peak clipping program.
Strategic Conservation	Strategic conservation is directed at reducing end-use consumption for selected time periods. Strategic conservation has a leveled effect on end-use consumption, and may have a lesser reduction to peak load. An example of strategic conservation is promoting purchases of efficient appliances.
Valley Filling	Valley filling is a program that promotes increasing off-peak loads. Promotion of night lighting is an example of a program that may build evening loads, and promotion of electric heat pumps is a program that builds off-season loads.
Load Shifting	Load shifting moves load from peak to off-peak periods. Irrigation load control and thermal energy storage systems are examples of load shifting.
Flexible Load Shape	Flexible load shape programs modify the load shape with daily calls to reduce loads when necessary. Interruptible load programs and time-of-day rates are an example of flexible load shape.

Source: EPRI

The City selected two primary load shape objectives from the six listed above. These are 1) Strategic Conservation and 2) Peak Clipping. DSM options that satisfy these load shape objectives were selected for further evaluation. While other load shape objectives could be implemented, the two objectives identified above offer many options that encourage activities which otherwise may not occur for economic reasons.

7.2. DSM Program Evaluations

Fourteen types of DSM programs were evaluated using an economic screening analysis. These programs are the following:

1. Residential Central Air Conditioning Load Cycling - This DSM program requires the installation of a load-control device that will turn off the air conditioner for a short time during summer peak-load periods. The customer incentive to participate is estimated to be \$20 per year with an average load reduction of 0.85 kW per control device on residential homes.
2. Residential Electric Water Heater Load Shedding - A customer incentive of \$20 per year would be given to customers already participating in the air conditioner load cycling program and who also have their electric water heater cycled off for periods of time during summer peak-load hours.

3. Residential High Efficiency Central Air Conditioners - For customers needing to replace their existing air conditioner, this program would provide rebates or incentives when the City selects the size of the replacement air conditioner. The requirements include that the unit's size will not be more than 125% of design heat gain according to ACCA Manual J standards, and a minimum Seasonal Energy Efficiency Ratio ("SEER") of 16, which is more efficient than current DOE established standards. Additional rebates or incentives may be provided from local distributors or manufactures.
4. Room and Window Air Conditioner Rebates - This program is for customers needing to replace their existing room or window air conditioner. Rebates of \$55 are provided for units with a SEER that is at least 20% more efficient than the current minimum standard established by the DOE.
5. High Efficiency Refrigerator/Freezer Rebate Program - Customers purchasing an Energy Star® Rated refrigerator/freezer would be eligible for a \$50 rebate. The old refrigerator must be properly disposed of by the dealer for proper recycling of refrigerator/freezer components.
6. Old Refrigerator Pick-up Program - The purpose of this program is to remove operating refrigerators that are used as a second unit in homes and from the used appliance market. The program educates residential customers about the costs of operating a second refrigerator and offers a \$50 payment for qualifying refrigerators or freezers. A regional contractor picks up the units and delivers them to a de-manufacturing facility. The total cost is about \$175 per unit.
7. Energy Efficiency for Existing Home – This program provides energy efficient improvements including additional insulation, reduction of infiltration, and full basement insulation would be eligible for a customer incentive. Additional requirements are that the central air conditioner and furnace are rates as high efficiency and not oversized.
8. Residential Energy Audits – The purpose of this program is to evaluate and potentially continue the City's current residential energy audit program. The City has developed a rebate program for conducting energy audits for its residential utility customers. The city is offering a \$125.00 rebate for customers seeking an energy audit. With the rebate, the audits are provided at a discount to the consumer and allow the consumer to make better use of their energy dollars. The intent of this program is to help retail customers understand how they can more wisely spend their energy dollars. The total cost is about \$250 per unit.
9. Commercial High-Efficiency Lighting Conversions - This program typically provides incentives, rebates, or loans for commercial and industrial customers who increase the efficiency of their existing lighting systems. Permanent fixtures are replaced with approved high efficient fixtures. Examples include converting from T-12 to T-8 lights with electronic ballasts, high bay metal halide conversions to T-8 or T-5 or induction florescent fixtures, and adding day-light harvesting controls.
10. Commercial High-Efficiency Air Conditioners - Commercial customers would receive incentives for replacing existing air conditioners with high-efficiency air conditioners. Examples of qualifying equipment are packaged terminal units, rooftop units, and split systems.
11. Commercial HVAC Efficiency Improvement Program - Commercial and Industrial customers with large cooling systems would be eligible for incentives, rebates or loans when they reduce their

electrical energy consumption of their HVAC systems by adding cooling tower capacity, variable speed drives or motors, and energy management controls to reduce peak hour loading.

7.3. Economic Evaluation of Alternatives

The projected annual cost for each option was compared to the projected power cost savings. Program savings for each of the DSM measures is based on the City's avoided costs; with avoided capacity costs based on the City's capacity purchase from LES, and avoided energy costs are based on the City's forecast of SPP day-ahead energy prices at the South Sioux City node on the NPPD transmission system⁶.

The net present value ("NPV") of the cost or savings of each option is then determined. The following assumptions were used in the economic evaluation:

- The evaluation was done on a "per-unit" basis, meaning the analysis evaluated one installation of the given option.
- Technical and cost information for each option is based on information contained in various other IRPs developed by public and private electric utilities of similar size and geographic location.
- Avoided demand and energy costs are based on the City's supply side resource evaluation assessment. Peak demand reductions are assumed to reduce seasonal capacity purchases, and energy conservation measures are assumed to reduce purchases from the SPP spot market.
- A discount rate of 5.0% is assumed in determining the NPV for each DSM measure.
- The Total Resource Cost ("TRC") was used to evaluate the alternatives. The TRC test is defined as the comparison of the option including costs incurred by the City and the end user, to the total cost savings realized.

The 11 DSM options were evaluated over their estimated useful life. The evaluation includes estimates of installation, operation, maintenance, administrative and general expenses over the useful life of the measure.⁷ The expenses are compared to the City's avoided capacity and energy cost. Annual net cost or savings are calculated and discounted to 2017 dollars.

A summary of the economic evaluations is shown in Table 6 and 7. DSM options with a positive net present value are considered economically viable. The detailed analysis of each individual DSM option is provided in Appendix A.

As can be seen below, none of the DSM programs is projected to be economically feasible. The DSM programs evaluated were not deemed economically viable due to the City's competitive power supply costs.

⁶ These cost projections have also served as a benchmark for evaluating supply options, since additional capacity and energy may both be purchased at similar prices.

⁷ The measures, participation rates, and program savings and cost estimates were developed based on information contained in the IRPs of electric utilities with similar demographic and geographic characteristics.

**Table 6
Economic Evaluation of Alternatives
Residential Demand-Side Options**

DSM Alternative	NPV Power Saving (per unit)	NPV Program Costs (per unit)	NPV Annual Program Savings/(Costs) (per unit)
Residential Central AC Load Cycling	\$276.87	\$433.01	(\$156.14)
Residential Electric Water Heater Load Shedding	\$146.47	\$453.66	(\$307.19)
Residential High Efficiency Central AC	\$244.05	\$1,107.90	(\$863.85)
Residential Room and Window AC Rebates	\$36.55	\$122.23	(\$85.69)
Residential High Efficiency Refrigerator Rebate	\$39.41	\$421.90	(\$382.50)
Old Refrigerator Pick-Up Program	\$90.59	\$166.67	(\$76.08)
Existing Home Weatherization	\$771.69	\$1,649.40	(\$877.70)
Residential Energy Audits	\$182.83	\$238.10	(\$55.27)

**Table 7
Economic Evaluation of Alternatives
Commercial Demand-Side Options**

DSM Alternative	NPV Power Saving (per unit)	NPV Program Costs (per unit)	NPV Annual Program Savings/(Costs) (per unit)
Commercial High-Efficiency Lighting Conversions	\$1,554.76	\$3,692.57	(\$2,137.82)
Commercial High-Efficiency Air Conditioners	\$1,347.85	\$1,605.48	(\$257.63)
Commercial HVAC Efficiency Improvement Program	\$2,356.56	\$2,400.71	(\$44.15)

8. Environmental Effects

The City believes it complies with all applicable provisions of state and federal environmental regulations under its power supply agreements and substation facilities. The City has considered impacts on the environment and the implication of the EPA's Clean Power Plan when developing this IRP. Preference was given to clean and renewable resources while soliciting and selecting new power supply options. Any new power supply resources procured by the City as part of this IRP will comply with the Clean Air Act and Clean Water Act, and will include emissions control technologies as may be required to help reduce the impacts of the emissions on the environment.

An important component of the City's resource portfolio is its purchase of renewable resources. The recent purchase of solar and biomass resources, and, its potential purchase of wind resources was made in response to customer preferences and without a state renewable portfolio standard requirement. In response to customer preferences, the City will continue to seek purchases from renewable energy as part of its future power supply portfolio.

9. Public Participation

An important part of the IRP development process is the City's comprehensive approach for including public participation in the plan. As described below, the City encouraged and welcomed public participation, developed a process for collecting the comments of its stakeholders, and has incorporated public comments into the plan as appropriate. Provided below is a description of the public participation process as implemented by the City.

- To encourage and include public participation in the IRP planning process, the City held two public presentations and provided a third opportunity for comment on the IRP as part of the City's regularly scheduled meetings. The first presentation was delivered at the Public Works Committee meeting, held on April 3, 2017. The second presentation was delivered at the Finance Committee meeting, held on April 5, 2017. The third opportunity for comment and discussion was at the City Council meeting, held on April 10, 2017, where the IRP was briefly discussed and approved. The City's committee meetings are open to the public and provide a great opportunity for public dialog.
- Approximately one week prior to the public meetings, the City posted an announcement on its public website providing notice that the draft IRP would be presented to the public for stakeholder comment. The notice included the date, time, and location of the public meeting.
- In conducting the public presentation, the City recorded the minutes of the meetings and videotaped the City Council meeting to accurately capture and collect any comments provided by the public.

The City believes the public presentation of the IRP at the Public Works Committee and Finance Committee meetings provided ample opportunity for full public participation in discussing the IRP.

The City received no comments on the 2017 IRP during either of the public presentations of the plan. Subsequently, on April 10, 2017, the City Council unanimously approved the City's 2017 IRP. Provided in Appendix B is the minutes from the Public Works Committee, Finance Committee, and City Council meetings recommending for approval of the IRP and approving the IRP, respectively.

10. Action Plan and Measurement Strategies

The City's IRP has identified a potential need for additional resources beginning as soon as 2020. The recommended action plan includes the solicitation and acquisition of existing resources available in the market, followed by the potential opportunity to develop, acquire, or purchase additional resources for meeting the City's future projected requirements. To the extent that DSM or supply resource availability, cost, and transmission access change over the forecast period, the city will revisit its action plan accordingly. Provided below is the City's short-term and long-term action plan.

10.1. Two-Year Action Plan

The City's research has identified that there is surplus power supply available in the region. Moreover, there are several utilities in the region that are interested in making a short-term power supply sales to the City. The following is the City's short term action plan.

- Solicit proposals for the capacity requirements for a period of three to five years. The solicitation should include many of the utilities within the northern part of SPP to minimize the potential for transmission congestion costs. This solicitation should be concluded by the earlier of late-2017 or when additional information is available regarding the ramp down of the NPPD contract.
- Continue to monitor the timing and magnitude of the City's anticipated incremental load from existing and new industrial customers located in the City's industrial park. As additional information on timing, magnitude and requirements becomes available, the City will factor that into its power supply procurement plan.
- Continue to evaluate and screen conservation programs. More detailed and customer specific conservation measure cost information should be developed for a more rigorous evaluation. As such, the City will continue to research and analyze economically viable DSM measures.

10.2. Five-Year Action Plan

The longer-term action plan includes analyzing the development and procurement of power supply options along with economically viable DSM programs. Based on the City's research of the economically valuable DSM programs and power supply options available in the market, provided below is the City's five-year action plan.

- Continue to develop and refine a more detailed methodology for forecasting the City's peak demand and energy requirements, especially as new information becomes available on the anticipated incremental load from new customers.
- Research the capital and operating costs of generation resources that could be developed and owned by the City. These cost estimates will provide a "backstop" solution for the City and

provide an estimate for comparing and evaluating any potential supply offers or generation acquisition opportunities.

- Identify potential generation resources that may provide an opportunity for full or partial acquisition and ownership by the City. Consistent with this IRP process, the environmental impacts of any power supply acquisition should be considered as part of the analysis.

The City should review and modify the above action plans if there are significant changes to peak demand growth, or DSM program and power supply costs estimates.

Appendix A: Analysis of DSM Measures

Residential Central AC Load Cycling

DSM Technology Residential	Summer Demand	Winter Demand	Annual Energy
Rated Load (kW per Unit)			
Coincident Factor (%)			
Contribution to Peak kW			
Demand Savings (%)			
Controllable Load (kW per unit)	0.85		
Annual Energy Usage			
Energy Savings (%)			
Energy Savings (kWh per unit)			10
Estimated Number of Customers	4,700	4,700	4,700
Estimated Appliance Saturation	10%	10%	10%
Market Eligibility	50%	50%	50%
Feasibility	100%	100%	100%
Estimated Controllable Units	235	235	235
Total Demand or Energy Savings (kW or kWh)	200	-	2,350

Estimated Installation Cost per Unit	\$196.41
Estimated Annual Maintenance Cost per Unit	\$15.00
Measure Life	25 Years
Cost Escalation	2.30%
Discount Rate	5.00%

	Summer Capacity Savings (kW/unit)	Winter Capacity Savings (kW/unit)	Annual Energy Savings (kWh/unit)	Summer Capacity Charge (\$/kW-mo.)	Winter Capacity Charge (\$/kW-mo.)	All-Hours Energy Charge (\$/MWh)	Annual Power Cost Savings (\$/unit)	Program Costs (\$/unit)	Power Cost Savings (\$/unit)	Annual Savings/(Cost) (\$/unit)	Present Value Annual Savings/(Cost) (\$/unit)
2017	0.85	-	10	2.50	2.50	19.88	12.95	196.41	12.95	(183.46)	(183.46)
2018	0.85	-	10	2.55	2.55	20.75	13.21	15.00	13.21	(1.79)	(1.70)
2019	0.85	-	10	2.60	2.60	21.71	13.48	15.35	13.48	(1.87)	(1.69)
2020	0.85	-	10	2.65	2.65	22.66	13.74	15.70	13.74	(1.96)	(1.69)
2021	0.85	-	10	2.70	2.70	23.53	14.01	16.06	14.01	(2.05)	(1.69)
2022	0.85	-	10	2.84	2.84	24.10	14.70	16.43	14.70	(1.73)	(1.35)
2023	0.85	-	10	2.98	2.98	24.77	15.43	16.81	15.43	(1.38)	(1.03)
2024	0.85	-	10	3.13	3.13	25.41	16.19	17.19	16.19	(1.00)	(0.71)
2025	0.85	-	10	3.28	3.28	26.00	17.00	17.59	17.00	(0.59)	(0.40)
2026	0.85	-	10	3.45	3.45	26.58	17.84	17.99	17.84	(0.15)	(0.10)
2027	0.85	-	10	3.62	3.62	27.17	18.72	18.41	18.72	0.32	0.20
2028	0.85	-	10	3.80	3.80	27.71	19.65	18.83	19.65	0.82	0.48
2029	0.85	-	10	3.99	3.99	28.23	20.63	19.26	20.63	1.36	0.76
2030	0.85	-	10	4.19	4.19	28.74	21.65	19.71	21.65	1.94	1.03
2031	0.85	-	10	4.40	4.40	29.37	22.72	20.16	22.72	2.56	1.30
2032	0.85	-	10	4.62	4.62	30.05	23.85	20.62	23.85	3.23	1.55
2033	0.85	-	10	4.85	4.85	30.79	25.04	21.10	25.04	3.94	1.80
2034	0.85	-	10	5.09	5.09	31.57	26.28	21.58	26.28	4.70	2.05
2035	0.85	-	10	5.35	5.35	32.46	27.59	22.08	27.59	5.51	2.29
2036	0.85	-	10	5.61	5.61	33.28	28.96	22.59	28.96	6.37	2.52
2037	0.85	-	10	5.89	5.89	34.29	30.40	23.11	30.40	7.29	2.75
2038	0.85	-	10	6.19	6.19	35.12	31.91	23.64	31.91	8.27	2.97
2039	0.85	-	10	6.50	6.50	36.06	33.50	24.18	33.50	9.32	3.19
2040	0.85	-	10	6.82	6.82	36.99	35.17	24.74	35.17	10.43	3.40
2041	0.85	-	10	7.16	7.16	38.07	36.92	25.31	36.92	11.61	3.60
								\$433.01	\$276.87		(\$156.14)

Residential Electric Water Heater Load Shedding

DSM Technology Residential	Summer Demand	Winter Demand	Annual Energy
Rated Load (kW per Unit)			
Coincident Factor (%)			
Contribution to Peak kW			
Demand Savings (%)			
Controllable Load (kW per unit)	0.45	0.00	
Annual Energy Usage			
Energy Savings (%)			
Energy Savings (kWh per unit)			5
Estimated Number of Customers	4,700	4,700	4,700
Estimated Appliance Saturation	15%	15%	15%
Market Eligibility	50%	50%	50%
Feasibility	100%	100%	100%
Estimated Controllable Units	353	353	353
Total Demand or Energy Savings (kW or kWh)	159	-	1,765

Estimated Installation Cost per Unit	\$218.09
Estimated Annual Maintenance Cost per Unit	\$15.00
Measure Life	25 Years
Cost Escalation	2.30%
Discount Rate	5.00%

	Summer Capacity Savings (kW/unit)	Winter Capacity Savings (kW/unit)	Annual Energy Savings (kWh/unit)	Summer Capacity Charge (\$/kW-mo.)	Winter Capacity Charge (\$/kW-mo.)	All-Hours Energy Charge (\$/MWh)	Annual Power Cost Savings (\$/unit)	Program Costs (\$/unit)	Power Cost Savings (\$/unit)	Present Value Annual Savings/ (Cost) (\$/unit)	Annual Savings/ (Cost) (\$/unit)
2017	0.45	-	5	2.50	2.50	19.88	6.85	218.09	6.85	(211.24)	(211.24)
2018	0.45	-	5	2.55	2.55	20.75	6.99	15.00	6.99	(8.01)	(7.63)
2019	0.45	-	5	2.60	2.60	21.71	7.13	15.35	7.13	(8.22)	(7.45)
2020	0.45	-	5	2.65	2.65	22.66	7.27	15.70	7.27	(8.43)	(7.28)
2021	0.45	-	5	2.70	2.70	23.53	7.41	16.06	7.41	(8.65)	(7.12)
2022	0.45	-	5	2.84	2.84	24.10	7.78	16.43	7.78	(8.65)	(6.78)
2023	0.45	-	5	2.98	2.98	24.77	8.16	16.81	8.16	(8.65)	(6.45)
2024	0.45	-	5	3.13	3.13	25.41	8.57	17.19	8.57	(8.63)	(6.13)
2025	0.45	-	5	3.28	3.28	26.00	8.99	17.59	8.99	(8.60)	(5.82)
2026	0.45	-	5	3.45	3.45	26.58	9.44	17.99	9.44	(8.56)	(5.52)
2027	0.45	-	5	3.62	3.62	27.17	9.91	18.41	9.91	(8.50)	(5.22)
2028	0.45	-	5	3.80	3.80	27.71	10.40	18.83	10.40	(8.43)	(4.93)
2029	0.45	-	5	3.99	3.99	28.23	10.91	19.26	10.91	(8.35)	(4.65)
2030	0.45	-	5	4.19	4.19	28.74	11.45	19.71	11.45	(8.25)	(4.38)
2031	0.45	-	5	4.40	4.40	29.37	12.02	20.16	12.02	(8.14)	(4.11)
2032	0.45	-	5	4.62	4.62	30.05	12.62	20.62	12.62	(8.00)	(3.85)
2033	0.45	-	5	4.85	4.85	30.79	13.25	21.10	13.25	(7.85)	(3.60)
2034	0.45	-	5	5.09	5.09	31.57	13.90	21.58	13.90	(7.68)	(3.35)
2035	0.45	-	5	5.35	5.35	32.46	14.60	22.08	14.60	(7.48)	(3.11)
2036	0.45	-	5	5.61	5.61	33.28	15.32	22.59	15.32	(7.26)	(2.87)
2037	0.45	-	5	5.89	5.89	34.29	16.08	23.11	16.08	(7.02)	(2.65)
2038	0.45	-	5	6.19	6.19	35.12	16.88	23.64	16.88	(6.75)	(2.42)
2039	0.45	-	5	6.50	6.50	36.06	17.72	24.18	17.72	(6.46)	(2.21)
2040	0.45	-	5	6.82	6.82	36.99	18.61	24.74	18.61	(6.13)	(2.00)
2041	0.45	-	5	7.16	7.16	38.07	19.53	25.31	19.53	(5.77)	(1.79)
								\$453.66	\$146.47		(\$307.19)

Residential High Efficiency Central AC

DSM Technology Residential	Summer Demand	Winter Demand	Annual Energy
Rated Load (kW per Unit)			
Coincident Factor (%)			
Contribution to Peak kW			
Demand Savings (%)			
Load Savings (kW per unit)	0.45	0.00	
Annual Energy Usage			
Energy Savings (%)			
Energy Savings (kWh per unit)			400
Estimated Number of Customers	4,700	4,700	4,700
Estimated Appliance Saturation	10%	10%	10%
Market Eligibility	50%	50%	50%
Feasibility	100%	100%	100%
Estimated Controllable Units	235	235	235
Total Demand or Energy Savings (kW or kWh)	106	-	94,000

Estimated Installation Cost per Unit \$1,091.00
 Estimated Annual Maintenance Cost per Unit \$5.00
 Measure Life 20 Years
 Cost Escalation 2.30%
 Discount Rate 5.00%

	Summer Capacity Savings (kW/unit)	Winter Capacity Savings (kW/unit)	Annual Energy Savings (kWh/unit)	Summer Capacity Charge (\$/kW-mo.)	Winter Capacity Charge (\$/kW-mo.)	All-Hours Energy Charge (\$/MWh)	Annual Power Cost Savings (\$/unit)	Program Costs (\$/unit)	Power Cost Savings (\$/unit)	Present Value Annual Savings/ (Cost) (\$/unit)	Annual Savings/ (Cost) (\$/unit)
2017	0.45	-	400	2.50	2.50	19.88	14.70	1,091.00	14.70	(1,076.30)	(1,076.30)
2018	0.45	-	400	2.55	2.55	20.75	15.19	5.00	15.19	10.19	9.70
2019	0.45	-	400	2.60	2.60	21.71	15.70	5.12	15.70	10.59	9.60
2020	0.45	-	400	2.65	2.65	22.66	16.22	5.23	16.22	10.99	9.49
2021	0.45	-	400	2.70	2.70	23.53	16.70	5.35	16.70	11.35	9.34
2022	0.45	-	400	2.84	2.84	24.10	17.30	5.48	17.30	11.82	9.26
2023	0.45	-	400	2.98	2.98	24.77	17.95	5.60	17.95	12.34	9.21
2024	0.45	-	400	3.13	3.13	25.41	18.60	5.73	18.60	12.87	9.15
2025	0.45	-	400	3.28	3.28	26.00	19.26	5.86	19.26	13.40	9.07
2026	0.45	-	400	3.45	3.45	26.58	19.94	6.00	19.94	13.94	8.99
2027	0.45	-	400	3.62	3.62	27.17	20.64	6.14	20.64	14.50	8.90
2028	0.45	-	400	3.80	3.80	27.71	21.34	6.28	21.34	15.07	8.81
2029	0.45	-	400	3.99	3.99	28.23	22.06	6.42	22.06	15.64	8.71
2030	0.45	-	400	4.19	4.19	28.74	22.80	6.57	22.80	16.24	8.61
2031	0.45	-	400	4.40	4.40	29.37	23.62	6.72	23.62	16.90	8.54
2032	0.45	-	400	4.62	4.62	30.05	24.49	6.87	24.49	17.61	8.47
2033	0.45	-	400	4.85	4.85	30.79	25.41	7.03	25.41	18.37	8.42
2034	0.45	-	400	5.09	5.09	31.57	26.37	7.19	26.37	19.18	8.37
2035	0.45	-	400	5.35	5.35	32.46	27.42	7.36	27.42	20.06	8.33
2036	0.45	-	400	5.61	5.61	33.28	28.47	7.53	28.47	20.94	8.29
2037											
2038											
2039											
2040											
2041											

\$1,107.90 \$244.05 (\$863.85)

Residential Room and Window AC Rebate Program

DSM Technology Residential	Summer Demand	Winter Demand	Annual Energy
Rated Load (kW per Unit)			
Coincident Factor (%)			
Contribution to Peak kW			
Demand Savings (%)			
Load Savings (kW per unit)	0.138		
Annual Energy Usage			
Energy Savings (%)			
Energy Savings (kWh per unit)			103
Estimated Number of Customers	4,700	4,700	4,700
Estimated Appliance Saturation	50%	50%	50%
Market Eligibility	50%	50%	50%
Feasibility	100%	100%	100%
Estimated Controllable Units	1,175	1,175	1,175
Total Demand or Energy Savings (kW or kWh)	162	-	121,025

Estimated Installation Cost per Unit	\$128.34
Estimated Annual Maintenance Cost per Unit	\$0.00
Measure Life	10 Years
Cost Escalation	2.30%
Discount Rate	5.00%

	Summer Capacity Savings (kW/unit)	Winter Capacity Savings (kW/unit)	Annual Energy Savings (kWh/unit)	Summer Capacity Charge (\$/kW-mo.)	Winter Capacity Charge (\$/kW-mo.)	All-Hours Energy Charge (\$/MWh)	Annual Power Cost Savings (\$/unit)	Program Costs (\$/unit)	Power Cost Savings (\$/unit)	Present Value Annual Savings/ (Cost) (\$/unit)	Annual Savings/ (Cost) (\$/unit)
2017	0.14	-	103	2.50	2.50	19.88	4.12	128.34	4.12	(124.23)	(124.23)
2018	0.14	-	103	2.55	2.55	20.75	4.25	-	4.25	4.25	4.05
2019	0.14	-	103	2.60	2.60	21.71	4.39	-	4.39	4.39	3.98
2020	0.14	-	103	2.65	2.65	22.66	4.53	-	4.53	4.53	3.91
2021	0.14	-	103	2.70	2.70	23.53	4.66	-	4.66	4.66	3.83
2022	0.14	-	103	2.84	2.84	24.10	4.83	-	4.83	4.83	3.78
2023	0.14	-	103	2.98	2.98	24.77	5.02	-	5.02	5.02	3.74
2024	0.14	-	103	3.13	3.13	25.41	5.21	-	5.21	5.21	3.70
2025	0.14	-	103	3.28	3.28	26.00	5.40	-	5.40	5.40	3.65
2026	0.14	-	103	3.45	3.45	26.58	5.59	-	5.59	5.59	3.60
2027											
2028											
2029											
2030											
2031											
2032											
2033											
2034											
2035											
2036											
2037											
2038											
2039											
2040											
2041											

\$122.23 \$36.55 (\$85.69)

Residential High Efficiency Refrigerator Rebate Program

DSM Technology Residential	Summer Demand	Winter Demand	Annual Energy
Rated Load (kW per Unit)			
Coincident Factor (%)			
Contribution to Peak kW			
Demand Savings (%)			
Load Savings (kW per unit)	0.082	0.082	
Annual Energy Usage			
Energy Savings (%)			
Energy Savings (kWh per unit)			100
Estimated Number of Customers	4,700	4,700	4,700
Estimated Appliance Saturation	100%	100%	100%
Market Eligibility	15%	15%	15%
Feasibility	100%	100%	100%
Estimated Controllable Units	705	705	705
Total Demand or Energy Savings (kW or kWh)	58	58	70,500

Estimated Installation Cost per Unit	\$443.00
Estimated Annual Maintenance Cost per Unit	\$0.00
Measure Life	10 Years
Cost Escalation	2.30%
Discount Rate	5.00%

	Summer Capacity Savings (kW/unit)	Winter Capacity Savings (kW/unit)	Annual Energy Savings (kWh/unit)	Summer Capacity Charge (\$/kW-mo.)	Winter Capacity Charge (\$/kW-mo.)	All-Hours Energy Charge (\$/MWh)	Annual Power Cost Savings (\$/unit)	Program Costs (\$/unit)	Power Cost Savings (\$/unit)	Present Value Annual Savings/ (Cost) (\$/unit)	Annual Savings/ (Cost) (\$/unit)
2017	0.08	0.08	100	2.50	2.50	19.88	4.45	443.00	4.45	(438.55)	(438.55)
2018	0.08	0.08	100	2.55	2.55	20.75	4.58	-	4.58	4.58	4.37
2019	0.08	0.08	100	2.60	2.60	21.71	4.73	-	4.73	4.73	4.29
2020	0.08	0.08	100	2.65	2.65	22.66	4.87	-	4.87	4.87	4.21
2021	0.08	0.08	100	2.70	2.70	23.53	5.01	-	5.01	5.01	4.12
2022	0.08	0.08	100	2.84	2.84	24.10	5.20	-	5.20	5.20	4.07
2023	0.08	0.08	100	2.98	2.98	24.77	5.41	-	5.41	5.41	4.03
2024	0.08	0.08	100	3.13	3.13	25.41	5.62	-	5.62	5.62	3.99
2025	0.08	0.08	100	3.28	3.28	26.00	5.83	-	5.83	5.83	3.95
2026	0.08	0.08	100	3.45	3.45	26.58	6.05	-	6.05	6.05	3.90
2027											
2028											
2029											
2030											
2031											
2032											
2033											
2034											
2035											
2036											
2037											
2038											
2039											
2040											
2041											

\$421.90 \$39.41 (\$382.50)

Old Refrigerator Pick-Up Program

DSM Technology Residential	Summer Demand	Winter Demand	Annual Energy
Rated Load (kW per Unit)			
Coincident Factor (%)			
Contribution to Peak kW			
Demand Savings (%)			
Load Savings (kW per unit)	0.065	0.065	
Annual Energy Usage			
Energy Savings (%)			
Energy Savings (kWh per unit)			410
Estimated Number of Customers	4,700	4,700	4,700
Estimated Appliance Saturation	100%	100%	100%
Market Eligibility	15%	15%	15%
Feasibility	100%	100%	100%
Estimated Controllable Units	705	705	705
Total Demand or Energy Savings (kW or kWh)	46	46	289,050

Estimated Installation Cost per Unit	\$175.00
Estimated Annual Maintenance Cost per Unit	\$0.00
Measure Life	10 Years
Cost Escalation	2.30%
Discount Rate	5.00%

	Summer Capacity Savings (kW/unit)	Winter Capacity Savings (kW/unit)	Annual Energy Savings (kWh/unit)	Summer Capacity Charge (\$/kW-mo.)	Winter Capacity Charge (\$/kW-mo.)	All-Hours Energy Charge (\$/MWh)	Annual Power Cost Savings (\$/unit)	Program Costs (\$/unit)	Power Cost Savings (\$/unit)	Present Value Annual Savings/ (Cost) (\$/unit)	Annual Savings/ (Cost) (\$/unit)
2017	0.07	0.07	410	2.50	2.50	19.88	10.10	175.00	10.10	(164.90)	(164.90)
2018	0.07	0.07	410	2.55	2.55	20.75	10.50	-	10.50	10.50	10.00
2019	0.07	0.07	410	2.60	2.60	21.71	10.93	-	10.93	10.93	9.91
2020	0.07	0.07	410	2.65	2.65	22.66	11.36	-	11.36	11.36	9.81
2021	0.07	0.07	410	2.70	2.70	23.53	11.75	-	11.75	11.75	9.67
2022	0.07	0.07	410	2.84	2.84	24.10	12.09	-	12.09	12.09	9.48
2023	0.07	0.07	410	2.98	2.98	24.77	12.48	-	12.48	12.48	9.31
2024	0.07	0.07	410	3.13	3.13	25.41	12.86	-	12.86	12.86	9.14
2025	0.07	0.07	410	3.28	3.28	26.00	13.22	-	13.22	13.22	8.95
2026	0.07	0.07	410	3.45	3.45	26.58	13.59	-	13.59	13.59	8.76
2027											
2028											
2029											
2030											
2031											
2032											
2033											
2034											
2035											
2036											
2037											
2038											
2039											
2040											
2041											

\$166.67 \$90.59 (\$76.08)

Existing Home Weatherization

DSM Technology Residential	Summer Demand	Winter Demand	Annual Energy
Rated Load (kW per Unit)			
Coincident Factor (%)			
Contribution to Peak kW			
Demand Savings (%)			
Load Savings (kW per unit)	1.00	1.00	
Annual Energy Usage			
Energy Savings (%)			
Energy Savings (kWh per unit)			800
Estimated Number of Customers	4,700	4,700	4,700
Estimated Appliance Saturation	50%	50%	50%
Market Eligibility	8%	8%	8%
Feasibility	100%	100%	100%
Estimated Controllable Units	188	188	188
Total Demand or Energy Savings (kW or kWh)	188	188	150,400

Estimated Installation Cost per Unit	\$1,725.22
Estimated Annual Maintenance Cost per Unit	\$0.46
Measure Life	20 Years
Cost Escalation	2.30%
Discount Rate	5.00%

	Summer Capacity Savings (kW/unit)	Winter Capacity Savings (kW/unit)	Annual Energy Savings (kWh/unit)	Summer Capacity Charge (\$/kW-mo.)	Winter Capacity Charge (\$/kW-mo.)	All-Hours Energy Charge (\$/MWh)	Annual Power Cost (\$/unit)	Program Costs (\$/unit)	Power Cost Savings (\$/unit)	Present Value Annual Savings/ (Cost) (\$/unit)	Annual Savings/ (Cost) (\$/unit)
2017	1.00	1.00	800	2.50	2.50	19.88	45.91	1,725.22	45.91	(1,679.32)	(1,679.32)
2018	1.00	1.00	800	2.55	2.55	20.75	47.20	0.46	47.20	46.74	44.52
2019	1.00	1.00	800	2.60	2.60	21.71	48.57	0.47	48.57	48.10	43.62
2020	1.00	1.00	800	2.65	2.65	22.66	49.93	0.48	49.93	49.45	42.71
2021	1.00	1.00	800	2.70	2.70	23.53	51.22	0.49	51.22	50.73	41.74
2022	1.00	1.00	800	2.84	2.84	24.10	53.30	0.50	53.30	52.80	41.37
2023	1.00	1.00	800	2.98	2.98	24.77	55.54	0.51	55.54	55.02	41.06
2024	1.00	1.00	800	3.13	3.13	25.41	57.84	0.53	57.84	57.31	40.73
2025	1.00	1.00	800	3.28	3.28	26.00	60.18	0.54	60.18	59.64	40.37
2026	1.00	1.00	800	3.45	3.45	26.58	62.62	0.55	62.62	62.07	40.01
2027	1.00	1.00	800	3.62	3.62	27.17	65.16	0.56	65.16	64.59	39.66
2028	1.00	1.00	800	3.80	3.80	27.71	67.76	0.58	67.76	67.18	39.28
2029	1.00	1.00	800	3.99	3.99	28.23	70.45	0.59	70.45	69.86	38.90
2030	1.00	1.00	800	4.19	4.19	28.74	73.25	0.60	73.25	72.65	38.53
2031	1.00	1.00	800	4.40	4.40	29.37	76.27	0.62	76.27	75.65	38.21
2032	1.00	1.00	800	4.62	4.62	30.05	79.46	0.63	79.46	78.82	37.92
2033	1.00	1.00	800	4.85	4.85	30.79	82.81	0.65	82.81	82.17	37.64
2034	1.00	1.00	800	5.09	5.09	31.57	86.35	0.66	86.35	85.69	37.39
2035	1.00	1.00	800	5.35	5.35	32.46	90.12	0.68	90.12	89.44	37.16
2036	1.00	1.00	800	5.61	5.61	33.28	93.98	0.69	93.98	93.29	36.92
2037											
2038											
2039											
2040											
2041											

\$1,649.40 \$771.69 (\$877.70)

Whole House Audits

DSM Technology Residential	Summer Demand	Winter Demand	Annual Energy
Rated Load (kW per Unit)			
Coincident Factor (%)			
Contribution to Peak kW			
Demand Savings (%)			
Load Savings (kW per unit)	0.15	0.15	
Annual Energy Usage			
Energy Savings (%)			
Energy Savings (kWh per unit)			800
Estimated Number of Customers	4,700	4,700	4,700
Estimated Appliance Saturation	50%	50%	50%
Market Eligibility	25%	25%	25%
Feasibility	100%	100%	100%
Estimated Controllable Units	588	588	588
Total Demand or Energy Savings (kW or kWh)	88	88	470,400

Estimated Installation Cost per Unit \$250.00
 Estimated Annual Maintenance Cost per Unit \$0.00
 Measure Life 10 Years
 Cost Escalation 2.30%
 Discount Rate 5.00%

	Summer Capacity Savings (kW/unit)	Winter Capacity Savings (kW/unit)	Annual Energy Savings (kWh/unit)	Summer Capacity Charge (\$/kW-mo.)	Winter Capacity Charge (\$/kW-mo.)	All-Hours Energy Charge (\$/MWh)	Annual Power Cost Savings (\$/unit)	Program Costs (\$/unit)	Power Cost Savings (\$/unit)	Present Value Annual Savings/ (Cost) (\$/unit)	Annual Savings/ (Cost) (\$/unit)
2017	0.15	0.15	800	2.50	2.50	19.88	20.41	250.00	20.41	(229.59)	(229.59)
2018	0.15	0.15	800	2.55	2.55	20.75	21.19	-	21.19	21.19	20.18
2019	0.15	0.15	800	2.60	2.60	21.71	22.05	-	22.05	22.05	20.00
2020	0.15	0.15	800	2.65	2.65	22.66	22.90	-	22.90	22.90	19.78
2021	0.15	0.15	800	2.70	2.70	23.53	23.68	-	23.68	23.68	19.49
2022	0.15	0.15	800	2.84	2.84	24.10	24.39	-	24.39	24.39	19.11
2023	0.15	0.15	800	2.98	2.98	24.77	25.17	-	25.17	25.17	18.79
2024	0.15	0.15	800	3.13	3.13	25.41	25.96	-	25.96	25.96	18.45
2025	0.15	0.15	800	3.28	3.28	26.00	26.71	-	26.71	26.71	18.08
2026	0.15	0.15	800	3.45	3.45	26.58	27.47	-	27.47	27.47	17.71
2027											
2028											
2029											
2030											
2031											
2032											
2033											
2034											
2035											
2036											
2037											
2038											
2039											
2040											
2041											

\$238.10 \$182.83 (\$55.27)

Commercial High-Efficiency Air Conditioners

DSM Technology Commercial	Summer Demand	Winter Demand	Annual Energy
Rated Load (kW per Unit)			
Coincident Factor (%)			
Contribution to Peak kW Demand Savings (%)			
Load Savings (kW per unit)	2.00		
Annual Energy Usage			
Energy Savings (%)			
Energy Savings (kWh per unit)			2,600
Estimated Residential Customers	820	820	820
Estimated Appliance Saturation	100.0%	100.0%	100.0%
Market Eligibility	25%	25%	25%
Feasibility	100%	100%	100%
Estimated Controllable Units	205	205	205
Total Demand or Energy Savings (kW or kWh)	410	-	533,000

Estimated Installation Cost per Unit	\$1,486.36
Estimated Annual Maintenance Cost per Unit	\$13.79
Measure Life	20 Years
Cost Escalation	2.30%
Discount Rate	5.00%

	Summer Capacity Savings (kW/unit)	Winter Capacity Savings (kW/unit)	Annual Energy Savings (kWh/unit)	Summer Capacity Charge (\$/kW-mo.)	Winter Capacity Charge (\$/kW-mo.)	All-Hours Energy Charge (\$/MWh)	Annual Power Cost Savings (\$/unit)	Program Costs (\$/unit)	Power Cost Savings (\$/unit)	Present Value Annual Savings/ (Cost) (\$/unit)	Annual Savings/ (Cost) (\$/unit)
2017	2.00	-	2,600	2.50	2.50	19.88	81.70	1,486.36	81.70	(1,404.66)	(1,404.66)
2018	2.00	-	2,600	2.55	2.55	20.75	84.55	13.79	84.55	70.76	67.39
2019	2.00	-	2,600	2.60	2.60	21.71	87.64	14.11	87.64	73.53	66.70
2020	2.00	-	2,600	2.65	2.65	22.66	90.71	14.43	90.71	76.28	65.90
2021	2.00	-	2,600	2.70	2.70	23.53	93.58	14.76	93.58	78.82	64.84
2022	2.00	-	2,600	2.84	2.84	24.10	96.69	15.10	96.69	81.59	63.93
2023	2.00	-	2,600	2.98	2.98	24.77	100.12	15.45	100.12	84.67	63.18
2024	2.00	-	2,600	3.13	3.13	25.41	103.58	15.81	103.58	87.77	62.38
2025	2.00	-	2,600	3.28	3.28	26.00	106.98	16.17	106.98	90.81	61.46
2026	2.00	-	2,600	3.45	3.45	26.58	110.46	16.54	110.46	93.92	60.54
2027	2.00	-	2,600	3.62	3.62	27.17	114.07	16.92	114.07	97.15	59.64
2028	2.00	-	2,600	3.80	3.80	27.71	117.64	17.31	117.64	100.33	58.66
2029	2.00	-	2,600	3.99	3.99	28.23	121.27	17.71	121.27	103.56	57.67
2030	2.00	-	2,600	4.19	4.19	28.74	124.98	18.12	124.98	106.86	56.67
2031	2.00	-	2,600	4.40	4.40	29.37	129.13	18.53	129.13	110.59	55.86
2032	2.00	-	2,600	4.62	4.62	30.05	133.55	18.96	133.55	114.59	55.12
2033	2.00	-	2,600	4.85	4.85	30.79	138.23	19.40	138.23	118.83	54.44
2034	2.00	-	2,600	5.09	5.09	31.57	143.17	19.84	143.17	123.33	53.81
2035	2.00	-	2,600	5.35	5.35	32.46	148.55	20.30	148.55	128.25	53.29
2036	2.00	-	2,600	5.61	5.61	33.28	153.88	20.76	153.88	133.11	52.68
2037											
2038											
2039											
2040											
2041											

\$1,605.48 \$1,347.85 (\$257.63)

Commercial HVAC Efficiency Improvement Program

DSM Technology Commercial	Summer Demand	Winter Demand	Annual Energy
Rated Load (kW per Unit)			
Coincident Factor (%)			
Contribution to Peak kW			
Demand Savings (%)			
Load Savings (kW per unit)	6.00	6.00	
Annual Energy Usage			
Energy Savings (%)			
Energy Savings (kWh per unit)			4,380
Estimated Residential Customers	820	820	820
Estimated Appliance Saturation	100.0%	100.0%	100.0%
Market Eligibility	33%	33%	33%
Feasibility	100%	100%	100%
Estimated Controllable Units	271	271	271
Total Demand or Energy Savings (kW or kWh)	1,626	1,626	1,186,980

Estimated Installation Cost per Unit \$2,480.16
 Estimated Annual Maintenance Cost per Unit \$5.24
 Measure Life 10 Years
 Cost Escalation 2.30%
 Discount Rate 5.00%

	Summer Capacity Savings (kW/unit)	Winter Capacity Savings (kW/unit)	Annual Energy Savings (kWh/unit)	Summer Capacity Charge (\$/kW-mo.)	Winter Capacity Charge (\$/kW-mo.)	All-Hours Energy Charge (\$/MWh)	Annual Power Cost Savings (\$/unit)	Program Costs (\$/unit)	Power Cost Savings (\$/unit)	Present Value Annual Savings/ (Cost) (\$/unit)	Annual Savings/ (Cost) (\$/unit)
2017	6.00	6.00	4,380	2.50	2.50	19.88	267.09	2,480.16	267.09	(2,213.07)	(2,213.07)
2018	6.00	6.00	4,380	2.55	2.55	20.75	274.49	5.24	274.49	269.24	256.42
2019	6.00	6.00	4,380	2.60	2.60	21.71	282.28	5.36	282.28	276.91	251.17
2020	6.00	6.00	4,380	2.65	2.65	22.66	290.05	5.49	290.05	284.56	245.81
2021	6.00	6.00	4,380	2.70	2.70	23.53	297.47	5.61	297.47	291.85	240.11
2022	6.00	6.00	4,380	2.84	2.84	24.10	309.70	5.74	309.70	303.96	238.16
2023	6.00	6.00	4,380	2.98	2.98	24.77	322.82	5.87	322.82	316.94	236.51
2024	6.00	6.00	4,380	3.13	3.13	25.41	336.34	6.01	336.34	330.33	234.76
2025	6.00	6.00	4,380	3.28	3.28	26.00	350.17	6.15	350.17	344.02	232.85
2026	6.00	6.00	4,380	3.45	3.45	26.58	364.53	6.29	364.53	358.24	230.93
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\$2,400.71 \$2,356.56 (\$44.15)

Appendix B: Public Works Committee Approval

**PUBLIC WORKS, PUBLIC SAFETY,
HOUSING AND COMMUNITY DEVELOPMENT MINUTES**

April 3, 2017

1

Members Present: Dan Bousquet, John Sanders, Jason Bowman. Absent: Dennis Nelson.
Media in Attendance: Dakota County Star and Sioux City Journal.

Jason Bowman stated that a current copy of the Open Meetings Act is posted on the north wall in the rear of the Council Chambers and is available for review by all citizens in attendance. A sign-in sheet is available at the entrance to the Council Chambers. We ask your assistance by signing in as this is a Federal Grant requirement. It is strictly voluntary to complete the sign-in sheet.

Bowman moved, seconded by Sanders, to excuse the absence of Dennis Nelson.
Voting Aye: Bowman, Bousquet, Sanders. Voting No: None.

1. PUBLIC WORKS – Jason Bowman, Chairman

- a. **Engineer's Report.** Jerry Ripley, JEO Consulting Group and Chad Kehrt, Olsson Associates, were available to answer questions regarding the various projects in the City. Information only. No action taken.
- b. **City's IRP 2nd Draft.** Lance Hedquist, City Administrator, went over the presentation with the committee regarding the IRP. Information only. No action taken.
- c. **Paving Daniels Lane.** Lance Hedquist stated that half of the cost would be paid by the City. Information only. No action taken.
- d. **Certificate of Pymt. #4 SubSurfco; \$136,492.37.** Veterans Dr. project. Bousquet moved, seconded by Sanders, to send to council with favorable recommendation. Voting Aye: Bousquet, Sanders, Bowman. Voting No: None.

2. PUBLIC SAFETY - John Sanders, Chairman

- a. **Approve Fireworks Agreement with J & M Displays.** For Cardinal Festival Days display. Bousquet moved, seconded by Sanders, to send favorably to council. Voting Aye: Bousquet, Sanders, Bowman. Voting No: None.

3. HOUSING AND COMMUNITY DEVELOPMENT – Dan Bousquet, Chairman

4. MISCELLANEOUS/ UNFINISHED BUSINESS

- a. **Second Hand Dealer Application.** Bousquet moved, seconded by Sanders, to send this application to council with a favorable recommendation. Voting Aye: Bowman, Sanders, Bousquet. Voting No: None.

There being no further business to discuss, at 5:15 p.m., Bousquet moved, seconded by Sanders, to adjourn the meeting. Voting Aye: Bowman, Sanders, Bousquet. Voting No: None.

Appendix C: Finance Committee Approval

FINANCE/LEISURE/LEGISLATIVE MINUTES

April 5, 2017

1

Members Present: Bruce Davis, Oscar Gomez, Carol Schuldt, Jack Ehrich.

Bruce Davis stated that a current copy of the Open Meetings Act is posted on the north wall in the rear of the Council Chambers and is available for review by all citizens in attendance. A sign-in sheet is available at the entrance to the Council Chambers. We ask your assistance by signing in as this is a Federal Grant requirement. It is strictly voluntary to complete the sign-in sheet.

1. **FINANCE – Chairman Bruce Davis**

- a. **Utility Appeals.** Ehrich moved, seconded by Gomez, to approve staff's recommendations for last week and this week's utility appeals. Voting Aye: Ehrich, Schuldt, Davis, Gomez. Voting No: None.
- b. **City's IRP 2nd Draft.** Lance Hedquist, City Administrator reviewed the IRP with the committee. Gomez moved, seconded by Ehrich, to send the IRP to council to review. Voting Aye: Ehrich, Gomez, Schuldt, Davis. Voting No: None.
- c. **Purchase of Wind Energy.** Ehrich moved, seconded by Schuldt, to send to council for discussion to develop an agreement. Voting Aye: Erhchih, Gomez, Schuldt, Davis. Voting No: None.
- d. **Iron Shore Insurance.** No action taken.

2. **LEISURE – Chairman Jack Ehrich**

- a. **Briar Cliff Agreement for use of City Fields.** Gomez moved, seconded by Schuldt, to send to council with a favorable recommendation. Voting Aye: Davis, Gomez, Schuldt, Davis. Voting No: None.
- b. **Plan at Least 2 Public Planning Meetings for the New Indoor Facility.** Should have sign in sheets to demonstrate that community participation was included. Information only. No action taken.

3. **LEGISLATIVE – Chairwoman Carol Schuldt**

- a. **Legislative Bills.** Davis moved, seconded by Gomez, to concur with the League and oppose LB 68. Voting Aye: Davis, Gomez, Schuldt, Davis. Voting No: None.

4. **MISCELLANEOUS AND UNFINISHED BUSINESS**

- a. **Ladder Truck Financing.** Committee request that this be postponed at the 3/8/17 & 3/23/17 meeting so that interest percentages could be obtained from Trecek @ Ameritas. Nanci Walsh, City Treasurer, recommended the 2nd option which is \$60,000 each year for 5 years. Gomez moved, seconded by Schuldt, to approve staff's recommendation. Voting Aye: Davis, Gomez, Schuldt, Davis. Voting No: None.
- b. **Sign Company Renewals for 2017.** Ehrich moved, seconded by Gomez, to recommend approval to council. Voting Aye: Davis, Gomez, Schuldt, Davis. Voting No: None.

There being no further business to discuss, at 12:40 p.m., Ehrich moved, seconded by Gomez, to adjourn the meeting. Voting Aye: Gomez, Ehrich, Schuldt, Davis. Voting No: None.

Appendix D: City Council Approval

**CITY OF SOUTH SIOUX CITY
COUNCIL MINUTES**

April 10, 2017

1

A meeting of the City Council of the City of South Sioux City, Nebraska, was held at the South Sioux City Council Chambers, 1615 1st Avenue in said City on the 10th day April, 2017, at 12:00 P.M. Present were Mayor Rod Koch and Council Members: Oscar Gomez, Carol Schuldt, Bruce Davis, Jason Bowman, John Sanders, Jack Ehrich, Dan Bousquet and Dennis Nelson . Absent: None. Media in attendance: None. Notice of the proceeding was given in advance thereof by advertising in the Dakota County Star and Mundo Latino attached to these minutes. Notice of the proceedings was given to the Mayor and all members of the Council and a copy of their acknowledgement of receipt of notice and the agenda is attached to these minutes. Availability of the agenda was communicated in advance notice to the Media, Mayor and Council of this proceeding and was open to the attendance of the public.

Mayor Koch stated that a current copy of the Open Meetings Act is posted on the north wall in the rear of the Council Chambers & is available for review by citizens in attendance. A sign-in sheet is available at the entrance to Council Chambers. We ask for your assistance by signing in as this is a Federal Grant requirement. It is strictly voluntary to complete the sign-in sheet.

Bowman moved, seconded by Sanders, to approve the following **Consent Agenda** consisting of: Council meeting minutes of 3/27/17; Special Council Minutes of 4/5/17; Public Works Minutes of 4/3/17; Finance Minutes of 4/5/17; 2017 Pawn Shop License Renewal/Gene's Pawn Shop, 206 ½ E. 11th St., South Sioux City, NE 68776; 2017 Sign Company Renewals; and Claims list #2017-09. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Chad Kehrt, Olsson Associates and Jerry Ripley, JEO Consulting Group, were on hand to give an update on the various projects in the city. Information only. NO action taken.

Mayor Koch presented the **Volunteer of the Month, Lance Swanson**, with a plaque and his appreciation for all Lance does for the community. No action taken.

Gomez moved, seconded by Davis, to approve the Alcohol Awareness Month Proclamation. Voiting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Mayor Koch then presented the **Alcohol Awareness Month Proclamation** to Britney Sininger Book, Teen Court Coordinator.

Gene Maffit, Parks and Recreation Director for the city, stated that Marge Moos had been awarded the Nebraska Community Forestry Dave Mooter Legacy Award. The Dave Mooter legacy award is defined as any person that their lessons, actions, dedication, and love for trees has been instilled and carried on by all those who know or knew that person, presently or posthumously. This award was presented at the April 5 Awards Day in Lincoln. Congratulations Marge!

**CITY OF SOUTH SIOUX CITY
COUNCIL MINUTES**

April 10, 2017

2

Gene Maffit also stated that the city was presented the **Tree City USA Award**, this being the 25th year the City has received it and the **Tree City USA Growth Award**. This being the 10th year the city has received it

Maffit commented that the city had received the **Nebraska Community Forestry Community Enhancement Award**. The award was presented on April 5 Awards Day in Lincoln. The community enhancement award is defined as a community that has established a green space project(s) within the community including proper care and maintenance.

Davis introduced the following Resolution and motioned for its approval:

RESOLUTION 2017-67

RESOLUTION SETTING TAP FEES FOR WATER SERVICE.

Ehrich seconded the motion. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Bowman introduced the following Resolution and motioned for its approval:

RESOLUTION 2017-68

RESOLUTION AUTHORIZING EXECUTION OF INTERLOCAL AGREEMENT FOR STREET SWEEPERS AND GIANT VAC.

Schuldt seconded the motion. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Bowman introduced the following Resolution and motioned for its approval:

RESOLUTION 2017-69

RESOLUTION AUTHORIZING PAYMENT FOR ENGINEERING SERVICES FOR GREENSTAR INFRASTRUCTURE OA PROJECT #B15-0063. Olsson Associates; \$3,000.00.

Schuldt seconded the motion. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Bousquet introduced the following Resolution and motioned for its approval:

RESOLUTION 2017-70

RESOLUTION AUTHORIZING PAYMENT FOR ENGINEERING SERVICES FOR WEST 16TH STREET PAVING PROJECT - CDBG #15-PW-013. Olsson Associates; \$2,422.00.

Sanders seconded the motion. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Bowman introduced the following Resolution and motioned for its approval:

RESOLUTION 2017-71

RESOLUTION AUTHORIZING PAYMENT FOR ENGINEERING SERVICES FOR WEST 32ND STREET STORM SEWER IMPROVEMENTS PROJECT #R161614.00. JEO Consult.Group; \$2,790.00.

**CITY OF SOUTH SIOUX CITY
COUNCIL MINUTES**

April 10, 2017

3

Ehrich seconded the motion. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Schuldt introduced the following Resolution and motioned for its approval:

RESOLUTION 2017-72

RESOLUTION AUTHORIZING PAYMENT FOR ENGINEERING SERVICES FOR THE FUTURES DRIVE PROJECT #R160540.00.

JEO Consulting Group; \$5,557.00.

Nelson seconded the motion. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Davis introduced the following Resolution and motioned for its approval:

RESOLUTION 2017-73

RESOLUTION AUTHORIZING PAYMENT FOR LABOR AND MATERIALS FOR THE VETERAN'S DRIVE ROADWAY & UTILITY IMPROVEMENT PROJECT #R150828.00.

Certificate of Pymt. #4 SubSurfco; \$136,492.37.

Bousquet seconded the motion. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Bousquet moved, seconded by Sanders, to approve Change Order #7 increase from L & L Builders; \$3,668.00 (Community Foundation new fire station). This is to add to furnish and install conduit raceways for 10 exterior cameras as directed by Electric Innovations. Cameras, equipment and wiring by others. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez. Voting No: None. Abstaining: Bowman

Nelson introduced the following Resolution and motioned for its approval:

RESOLUTION 2017-74

RESOLUTION AUTHORIZING PAYMENT FOR LABOR AND MATERIALS FOR THE SOUTH SIOUX CITY FIRE STATION - PROJECT NO. R090399.02.

Community Foundation; \$190,246.00. L & L Builders Application.

Bousquet seconded the motion. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Bowman introduced the following Resolution and motioned for its approval:

RESOLUTION 2017-75

RESOLUTION AUTHORIZING PAYMENT FOR TITLE SEARCHES FOR OWNER OCCUPIED REHABILITATION (OOR GRANT #15-HO-35074). L & C Title & Escrow; \$102.00.

Ehrich seconded the motion. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

**CITY OF SOUTH SIOUX CITY
COUNCIL MINUTES**

April 10, 2017

4

Davis introduced the following Resolution and motioned for its approval:

RESOLUTION 2017-76

RESOLUTION AUTHORIZING PAYMENT FOR LABOR AND MATERIALS FOR THE SCENIC PARK BATH HOUSE AND CONCESSION STAND. *Mark Albenesius, Inc.; \$56,865.00.*

Bowman seconded the motion. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Davis moved, seconded by Gomez, to approve the appointment of Todd Strom to the Community Foundation. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Bowman moved, seconded by Schuldt, to approve the appointment of Dan Bousquet to the LEC Board to fill the vacancy left by Bill McLarty. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Bowman moved, seconded by Ehrich, to approve the Second Hand Dealer application from ecoATM LLC. This will be located inside at 1601 Cornhusker Dr., South Sioux City, NE Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Bowman moved, seconded by Bousquet, to approve the Fireworks Agreement with J & M Displays for Cardinal Days. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Davis moved, seconded by Schuldt, to approve the integrated resource plan for electricity to be submitted to the Western Area Power Administration. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting NO: None..

Davis moved, seconded by Nelson, to authorize the city staff and city attorney to develop an agreement with NextEra for 15 megawatts of wind energy produced in Nebraska.

Davis moved, seconded by Schuldt, to approve the agreement between the City and Briar Cliff for use of city fields. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

Nelson moved, seconded by Bousquet, to accept the quote from Electric Pump in the amount of \$21,232.00 for the backup pump to Roth Lift Station. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

**CITY OF SOUTH SIOUX CITY
COUNCIL MINUTES**

April 10, 2017

5

Rick Huertz, 1498 Bennet Avenue, South Sioux City, NE commented on the rebar in the ground up concrete on E. 37th (149th street) puncturing vehicle tires. Staff stated that the contractor had went over the area with a magnet and that they would check to see if it needs to be done again.

Several members of the volunteer fire department to speak regarding the volunteers. On hand were Kevin Ott, Christine Olsson, Kody Keefer and Toby English. Also in attendance representing the volunteers but not commenting was Lacey Hallstrom. Information only. No action taken.

There being no further business to discuss, at 6:10 p.m., Bousquet moved, seconded by Bowman, to adjourn the meeting. Voting Aye: Schuldt, Nelson, Ehrich, Sanders, Davis, Bousquet, Gomez, Bowman. Voting No: None.

MAYOR

ATTEST:

CITY CLERK

I, the undersigned City Clerk, hereby certify that the foregoing is a true and correct copy of the proceedings had and done by the Mayor and Council, that all of the subjects included in the foregoing proceedings were contained in the agenda for the meeting kept continuously current and available for public inspection at the office of the Clerk; that such subjects were contained in said agenda for at least twenty-four hours prior to said meeting, that at least one copy of all reproducible materials discussed at the meeting was available at the meeting for examination and copying by members of the public; that the said minutes were in written form and available for public inspection within ten working days and prior to the next convened meeting of said body; that all news media requesting notification concerning meetings of said body were provided advance notification of the time and place of said meeting and the subjects to be discussed at said meeting.

CITY CLERK