

Utilities Department – Highlights for 2014

- **Production Division**

Changes in the way Labor and Materials are tracked were implemented with new software called Mainsaver. Personnel were trained and processes modified to work with the new software.

Platte Generating Station

- A major upgrade occurred this year to meet the new air regulation called MATS (Mercury and Air Toxics Standards). Construction of the Air Quality Control System started with foundations in 2013, and construction of structural components starting in March of 2014 through October. The tie into the plant occurred during the Fall Outage, which included the replacement of the 5kv electrical switchgear. Following the outage, tuning and learning how to operate the new equipment continued.

While much time was spent with the new equipment, other items that were completed included:

- Removing decommissioned equipment from the water room.
- Repairing coal mills that are used to pulverize coal burned in the boiler.
- Cleaning and Inspection of the bottom ash system.
- Cleaning the precipitator and ductwork.
- Boiler repairs – pad welds were made to thinning tubes, and a leak was repaired in the furnace section. The tube shields were repaired, and build-up of ash in the economizer section of the boiler had to be blasted and rodded out.
- The fire line to the transfer house on the coal system was repaired with the assistance of the Water Shop and Line Department.
- Boiler feed pump motor 1B was rebuilt.
- Cooling tower fan gear box 1E had an oil leak and was disassembled and rebuilt.
- Conveyor #4 belt was replaced.
- Cooling tower fan blades and shrouds were replaced.
- Maintenance repaired several control valves in the plant,
- The warehouse HVAC unit was replaced.
- New CEMS (Continuous Emissions Monitoring) equipment was installed and existing equipment moved to the new duct location.
- A concrete drive was poured around the site to mitigate dust as required by the Air Permit.

A fire occurred in the new ductwork when Powder Activated Carbon, which is used to control mercury, had blown into the new ductwork to test the new equipment. Welding sparks ignited the carbon. The Fire Department was called to PGS to foam the ductwork and put out the fire. No personnel were injured, and no equipment was damaged.

Burdick Station

- A de-chlorination system was installed at Burdick Station allowing City water to be used for cooling water on plant equipment, and to meet the discharge requirements.
- New unit electric heaters were installed at Burdick Station.
- Steam Units 1, 2, and 3 breakers were cleaned and inspected, and Borescope inspections were completed on GT 2 and .
- An inspection of the steam unit #3 circulation water pipe was conducted with the assistance of the Waste Water Department camera. Internal inspection of the pipe showed the pipe looked good, with the exception of the pipe that immediately exits the pumps.
- Circulating water pipe was repaired and tested.

- The Black Start procedure was tested successfully. Great work by Burdick personnel with help from Phelps Control.
- Steam Unit #1 ID fan breakers were repaired.
- The gas turbines received an upgrade to the Mark V, HMI (Human Machine Interface) computers.
- The CO₂ tank used for fire suppression on the Gas Turbines was found defective. The level indication was repaired, and the tank was refilled.

Water System

- Additional monitoring signals were installed at the Uranium Removal Treatment Plant. This allows operators to see differential pressures at Burdick Station giving them the ability to start up the system without having an operator on-site.
- A comprehensive study of the water system was completed by HDR to create a Water Master Plan. The plan has the capital improvements needed to maintain and improve the water system to provide the quality and quantity of water needed as Grand Island grows.
- The Uranium Removal System requires periodic exchange of the media. Water Remediation Technology exchanged media in Train 2 of the Uranium Removal System.

Water Department

- The Water Department was very busy working with contractors again this year. There were four 6" line stops and two 6" line valves installed for the Highway 30 Drainage Project.
- There were four 10" Line Stops made, two 10" line valves replaced, and one new 10" line valve installed for the Webb Road widening and Storm Sewer Project.
- Numerous taps ranging in size from ¾" to 12" were made throughout the City for various projects.
- Crews installed 350' of 6" diameter water main for two new fire protection services at the new Phelps Control Warehouse, and the new utilities building at 1306 West 3rd Street.
- A contractor doing a directional bore hit a 10" water main at 3rd and Broadwell Streets causing it to rupture. The break was isolated with only an hour outage for water customers. Permanent repairs were completed and the water main was back in service a few hours later.
- The Water Department began maintaining over 100 private fire hydrants throughout the City this year; many that have never been inspected since they were originally installed.
- There were 14 broken water mains repaired. Six fire hydrants and seven line valves were replaced in addition to normal system maintenance including:
 - ✓ Operating line valves and fire hydrants
 - ✓ Flushing 74 dead ends
 - ✓ Collecting 832 weekly water quality samples
 - ✓ Making 169 new and replacement taps including eleven 8", two 10", and one 12" tap
 - ✓ Repaired or replaced 393 water meters
 - ✓ Placing and then picking up 74 fire hydrant meters for contractors
 - ✓ Performing 2,435 locates for customers requested through Digger's Hotline of Nebraska

Backflow Program

2014 Backflow Prevention Device Testing Statistics:

- ✓ 3,985 First Notice reminders were mailed
- ✓ 829 Certified Letters Delivered
- ✓ 86 48 Hour Notices left at the door
- ✓ 20 Water Services shut off for failure to test

2014 Backflow Prevention Device Installation Statistics:

- ✓ 52 First Notices to require installation were mailed
- ✓ 21 Certified letters were delivered
- ✓ 4 48 Hour Notices were delivered at the door
- ✓ 1 Customer was shut off due to non-compliance of backflow device installation

Transmission – Phelps Control Center

- In December 2013, a contract was signed with Black & Veatch to develop a comprehensive 20 year Electric System Master Plan. Throughout 2014, data was gathered and various studies were performed followed by an initial draft of the Master Plan. A final draft with recommendations is expected in early 2015.
- The construction of the new Substation J located on the northwest corner of the Platte Generating Station property was completed. The substation should be ready for service in early 2015. The control building for this substation is a special storm hardened concrete structure that will eventually serve as a back-up control room to allow operation of the electric system in the event that Phelps Control Center has to be abandoned.
- Lacy Construction was contracted for the construction of a new warehouse immediately north of Phelps Control Center. The majority of the work is finished with minor exterior work remaining as well as interior finishing. The warehouse is expected to be completed within the first quarter of 2015.
- Platte Valley Communications was contracted for the installation of a new 120 foot communications tower and equipment building north of the new Phelps Control Center Warehouse. This work has been completed with plans to begin using the tower in early 2015.
- Grand Island began participating in the Southwest Power Pool (SPP) Integrated Marketplace (IM) on March 1, 2014. This significantly changed the way Grand Island buys and sells power to the regional grid. The new market involves submitting bids a day ahead for power purchases and sales, and then adjusting those bids real-time during the day.
- The replacement of the large power transformer that powers Substation G was completed with the new transformer being energized in April. This is the first of four transformers to be replaced over the next several years. A bid package was sent out for the purchase of a new transformer to replace the Substation H south transformer. A contract was awarded to WEG with an anticipated delivery in September 2015.
- The communications loop that provides essential communications between the substations and Phelps Control Center was upgraded to eliminate some obsolete equipment and incorporates Substation J into the loop. This will also allow for the upgrading of several obsolete transmission relays during 2015.
- Survey and design work began to develop a construction bid package for the upgrade of transmission line 1093 between Substation E and Nebraska Public Power District's Grand Island Substation and line 1064B between Substation C and Substation E. These two lines have been identified as potentially overloaded lines late in the 20 year study period of the previously mentioned Electric System Master Plan. This work is anticipated to begin in the fall of 2015.

Underground Division

- Planned rebuilds were integrated with service upgrades being done by various customers. The combining of the two met the need of new customers and maintenance of the system. Under this combination, 49 transformers and 16 high voltage terminals made up of 86 cable runs with 268 cable terminations were installed.

- Some notable projects in this classification were:
 - ✓ Brentwood Subdivision
 - ✓ Platte Generating Station – outside source transformer
 - ✓ Stuhr Museum
 - ✓ Newell School
 - ✓ Case New Holland Logistics Facility – 1011 Claude Road
 - ✓ Westpark Plaza - West Highway 30
 - ✓ Residence at 323 Mallard Lane
 - ✓ Good Samaritan Village
 - ✓ Riverside – Stagecoach Road area
 - ✓ Dr. Stec - 3010 Faidley Avenue
 - ✓ First Federal Building – 1811 West 2nd Street
 - ✓ Residence at 1919 LaMar
 - ✓ Centris Credit Union – 3406 West State Street
 - ✓ Senior High School – south side metering
 - ✓ Veterans Home – east side metering
- New customer services required the installation of 58 transformers, seven high voltage terminals that were made up of 80 cable runs and 244 cable terminations. Notable installations were:
 - ✓ Copper Creek – West Old Potash Highway
 - ✓ A sign at 4030 East Highway 30
 - ✓ Kurz Subdivision – 1300 Block East 8th Street
 - ✓ Midwest Restaurant Supply – 2705 W. Highway 30
 - ✓ Chief Fabrication – 1119 S. Adams Street
 - ✓ Northwest High School Concession Building and related area
 - ✓ Wastewater Treatment Plant – Headworks Project
 - ✓ Ummel Property – 567 S. Shady Bend Road
 - ✓ Rich & Sons Camper Prep Building – 4395 Gold Core Drive
 - ✓ Glade Property – 3812 S. Blaine
 - ✓ Starostka Building – 4360 W. Highway 30
 - ✓ Taco Bell – 2211 S. Locust Street
 - ✓ Central Nebraska Regional Airport Hanger Relocation
 - ✓ Grand Island Dermatology – 418 N. Webb Road
 - ✓ State Fair Administration Building at Fonner Park
 - ✓ South Place Condo's – 1419 S. Adams Street
 - ✓ Phelps Control Center – 800 Block of Bischeld
 - ✓ Bain/Baxter Property – 4443 W. Capital Avenue
 - ✓ Mainstay Suites – 3051 S. Locust Street
 - ✓ Pepper Jax Grill – 940 Allen Drive
 - ✓ Summerfield Estates – North Road and State Street
 - ✓ Life Solutions – 912 Claude Road
- Transfer of existing overhead areas to underground was prompted by several reasons to meet the needs of increased size of existing customer services; readying the system to allow for customer installation of underground services; reduce the needs of maintenance due to trees, and to deal with no alley access. Installed during these projects were:
 - 33 transformers
 - 11 high voltage terminals
 - 73 runs of cable, made up with 230 terminations

Projects under this classification were:

- ✓ Riverside II Project – Grand Street to Pioneer Blvd.
- ✓ Kingswood Estates – along the south side, and Roush Lane

- ✓ Rose Welding – 2216 East Hwy. 30
 - ✓ Nitzel Subdivision – 100 Block of East 4th Street
 - ✓ Rick Building – 823 East 4th Street
 - ✓ O'Hara Building – 3827 Arch Avenue
 - ✓ Culligan – 3112 W. Old Potash Highway
 - ✓ Hansen International – 3354 W. Stolley Park Road
 - ✓ Brentwood area – east of Sothman Drive, under the outfall ditch
- Installed feeder capacity infrastructure to utilize new feeders that will be coming out of the new Substation J located at Wildwood Drive and Blaine Street. The underground portion of the project was made up of one pad-mount transformer for house power, seven pad-mount enclosures containing 26 switches, six overcurrent means and 152 cable terminations. As part of the increased feeder capacity and reliability, a feeder capacity circuit was added under:
 - ✓ Highway 34 at Central Community College
 - ✓ Wildwood Drive and the Beltline Track
 - ✓ Highway 281 at South Webb Road
- Total cable footages installed during the year were:
 - ✓ Single Phase new: 16,493 ft.
 - ✓ Three Phase new: 13,860 ft.
 - ✓ Single Phase replaced: 14,583 ft.
 - ✓ Three Phase replaced: 3,898 ft.
- Performed and documented 7,405 locates requested through Diggers Hotline of Nebraska. Of those requests, 3,323 required performing a locate of either Electric Department owned lines or customer owned secondary voltage lines up to the main distribution device.

Utilities Engineering Division

- The Utilities Engineering Division acts as a point of contact between the Utilities Department and other City departments, divisions, outside agencies, and the public. The Division provides full engineering services, including planning and design, GPS surveys and staking, GIS data, construction inspection, and testing for electrical and water infrastructure projects.
- Major work during calendar year 2014 involved drafting, editing or revision of 331 CADD files and related database records; preparing 40 easements and permit applications; and 10 contracts and requests for proposals for department projects. Additionally, the Engineering Division performed construction inspection and testing on 33 public and private water main projects.
- The related project upgrades and new construction resulted in over 9,000 linear feet of new public water lines, and 58,000 linear feet of power line upgrades throughout the service area.
- With the increasing number of yearly projects, and to help meet customer expectations of reliable and plentiful power and water service, a Civil Engineer position was added to the division. Jamie Royer is responsible for helping prepare plans and specifications for projects, perform system analysis and recommendations, and assist with construction oversight to ensure compliance with contract documents and standards.

Overhead Division

- In 2014 the Overhead Division maintained and upgraded the overhead distribution lines which entailed 6,142 linear feet of single phase line, and 10,050 linear feet of 3-phase line being rebuilt. These upgrades eliminated old primary lines and secondary service wires to provide safer and more reliable service to utility customers, and to keep the interruption indices (SAIDI) and (SAIFI) well below national averages.
- Crews upgraded 11,570 linear feet of phase to 3-phase line at the Wellfield. Poles were replaced, and a new conductor was installed. Existing services and transformers were upgraded as needed. The conversion will allow for a loop feed at the Wellfield between E-35 and A-24 and will also eliminate conductor galloping issues that have happened in the past.
- Along the hike and bike trail, 2,000 linear feet of 3-phase was upgraded. Some trees were removed, and self-supporting poles were installed to add an additional loop feed and to improve the aesthetics along the trail.
- Forty secondary pedestals were installed for new services or service upgrades.
- The Overhead Divisions continuous efforts to keep vegetation clear of power lines were a contributing factor for minor outages during 2014. In 2014, there were only four reported outages that were attributed to trees. This was accomplished with the divisions own Tree Trimming Crew, and the use of two contractors clearing 10 sections of lines and removing 214 trees this past year.
- Line Crews installed or replaced 304 transformers. This has improved system reliability and power quality for utility customers as loads continue to increase.
- During 2014, the Overhead Division assisted Public Works with snow removal and maintenance of traffic signals.
- The automated meter infrastructure pilot project continues to be a success. There are currently 160 water meters installed and 546 electric meters. The daily read percentage has been 99.8%. The system has been useful for meter readings doing disconnects and trouble shooting for both water and electric.

Utility Warehouse Division

- In 2014, The Utility Warehouse quoted, purchased, received and stocked \$3,718,869.79 worth of materials for the Utilities Department. This represents only the material that is in the inventory system.
- The Storeroom issued \$2,948,204.30 worth of materials while salvaging, cleaning and restocking \$452,783.41.
- Burned up transformers were also pre-tested, sorted, documented and sold in May of 2014. The total amount received from the sale was \$28,901.19.
- Scrap aluminum, copper, electrical brass and ACSR wire were processed, weighed, stored, and sold for \$118,047.76.