Utilities Department – Highlights for 2011

Production Division:

- The Production Division had a change in leadership as Tim Luchsinger was promoted to Utilities Director after 25 years of leadership as Assistant Utilities Director of the Production Division. Lynn Mayhew was promoted to the position of Plant Superintendent of Platte Generating Station from his position of Production Engineer, and Ryan Schmitz was hired as the new Production Engineer. Two new Maintenance Mechanics were also hired; Whit Ahrens, and Fred Eickhoff, and one Material Handler; Colt Burkhardt. These changes and additions to the long time staff of the Production Division continue to make the Platte Generating Station one of the most reliable plants in the nation, *with a five year availability factor of 93.7% and a forced outage rate of 0.34%*. *The national average for a coal unit is 86.6% and 5.66%, respectively. The staff is working safer with 365 days of no time lost due to an accident.*
- At Burdick Station, a Generator Breaker was installed on Steam Unit #2 to increase the reliability of Substation "H".
- Inspections and cleaning of Burdick Steam Units #1 and #2 equipment breakers were completed in anticipation of increased run time to meet the Cross State Air Pollution Rule. An inspection of the combustion areas of Gas Turbine #2 was completed. Gas Turbine #1 received a new coat of paint.
- Burdick Reservoir was painted inside and out.
- The siding on the Rogers Pump Station was replaced.
- Platte Generating Station installed a new Water Purification System to treat boiler water, and the auxiliary boiler received new, more reliable controls.
- The road to the bottom ash area was improved to mitigate dust. The Nebraska Department of Environmental Quality inspected the ash disposal site and found the department is properly disposing of ash.
- Improvements to the rail loop around Platte Generating Station were made, to include new grade crossings.
- The staff continues to work diligently on new projects that will be completed in 2012:
    - A new Water Treatment Project at the City Wellfield will remove uranium.
    - Changes in Environmental Regulations are requiring the Platte Generating Station to report Green House Gases, meeting federal reporting requirements.
    - Installing new coal burners that will reduce the amount of Nitrogen Oxides that are produced.

Phelps Control & Dispatch:

- During 2011, the following items related to the new 115 kV transmission line northwest of the City were completed:
    - Detailed easement surveys.
    - Application preparation, filing and subsequent approval by the Nebraska Power Review Board.
    - Application preparation, filing and subsequent approval by the Nebraska Public Service Commission.
    - Application preparation, filing and subsequent approval by Burlington Northern Santa Fe Railroad for a revised crossing permit.
    - A completed line construction bid package was issued with bids received from several companies. The bid was awarded to IES Commercial at the October 25, 2011 Council meeting.

- All that remains for the new transmission line is the actual construction which is planned to begin in the spring of 2012 to be completed by the end of 2012.

- *Transmission System Maintenance.* A detailed inspection and preservation of every 115 kV transmission structure in the system was completed. Several poles are in need of replacement as well as some hardware that needs repaired. These repairs will be included with the construction of the new 115 kV transmission line. In addition, replacement protective relaying was purchased in order to upgrade the system to current industry standards. Installation of the new relaying will occur during 2012.

- *Substation J.* New transformers were received for the future Substation "J" to be constructed on the northwest corner of the Platte Generating Station property. These transformers will be stored at this site until the construction is completed. Construction of this new substation is tentatively planned for 2013.

- *Whelen Energy Center Unit #2.* The City began receiving power from Whelen Energy Center Unit #2 in Hastings after going commercial in May. This unit will help reduce the use of more expensive natural gas generation during the summer months.

- *Phelps Control Center Telephone System.* Proposals were received for a replacement telephone system at Phelps Control Center. The older system was obsolete with replacement parts difficult to find. A new system was installed and commissioned in December. In addition to a new phone system, additional lines were added to allow the processing of more phone calls from customers. This will help reduce calls to the 911 Center during large power outages.

- *Burlington Northern Santa Fe (BNSF) Widening Project.* In order to allow BNSF to complete their track widening project through the City, a modification to a 115 kV transmission line crossing east of town was required. In addition, a lattice structure that was no longer used needed to be removed. Both of these items were completed in December.

Water Division:

- The City has several water distribution mains that cross under the Union Pacific Railroad tracks looping the City's water system. Some of these lines were installed in the 1930's without protective casings. Two of these lines experienced failures directly under the Union Pacific's main line tracks; one at Broadwell Avenue, and one at Vine Street. The Water Division was able to isolate these line failures by installing valves on both sides of the tracks without disrupting train traffic and only short outages for water customers. The lines were replaced at a later date with protective casings.
- The City received a Community Development Block Grant to replace several water mains in the area of 6th and Eddy Streets that were installed in the early 1900's. The mains that were almost 100 years old were too small to provide sufficient water to customers, and for fire protection. The Water Division prepared the construction work for the contractor by tying water mains together for greater volume and capping mains that were no longer going to be used. Five fire hydrants were replaced in the area with modern "pumper" hydrants.
- Three hundred foot of six inch diameter water main was replaced at 8th and Greenwich Street to eliminate a cross connection with an existing storm sewer,
- In November of 2011, the Water Division installed the water lines for the City's new uranium removal system at the Platte River Wellfield. Three 18" valves were installed and approximately 150 foot of 18 inch diameter water main. High ground water and a couple of days of bad weather slowed down progress, but the project was completed on time.

Construction & Engineering Division:

- The Engineering Division provides full scale engineering services and construction management for water man and power line projects through the City and our Service Area. The work includes: surveying, design, computer aided drafting (CAD), global positioning systems (GPS), geo-graphic information systems (GIS), and infrastructure mapping. During 2011, the Division was involved with the installation of over 23,000 lf. of pipe projects, and over 28,000 lf. of new power line circuits. This resulted in preparing 321 construction drawings and system maps. Major projects included:
    - Served as a liaison with the Burlington Northern Santa Fe's (BNSF) engineering firms, providing background data, direction, guidance, and plan review for the relocation of water and power lines required for the Railroad Double Track Project through town.
    - Replaced the 100+ year old piping in the 7th and Clark Street area and in the 6th and Elm Street area; replacing mains under the UPRR tracks at Broadwell Avenue, Cedar Street, and Vine Street.
    - Completed the 20" main around the west side of the City in Engleman Road. This is a major trunk line expansion to improve the system's hydraulics, flow and pressure characteristics.
    - Prepared legal documents and plats for the acquisition of 53 easements and deeds; nine infrastructure contracts, three Requests for Quotes, and one Request for Proposal for electrical and water construction. These include projects along Pioneer Blvd., Park Drive, Riverview Drive, Grand Avenue, August Street and Hagge Avenue; and the engineering services for the extension of the City's water system into Merrick County to replace contaminated private wells.
    - Completed the seven mile topographical survey for the new 115 kV power transmission between Substation "F" (Capital Avenue & Hwy. 281) and the NPPD substation (Engleman Road, north of Chapman Road). All information was obtained using GPS. This allowed the Division to collect the data in half the time versus conventional survey methods.

Admin. Distribution:

- Negotiations with Cinnabar Southwest and Burlington Northern Santa Fe (BNSF) Railroad began in May, 2011, when BNSF presented their plan for construction of a second track through Grand Island. The Utilities Department was looking a $5,000,000 outlay as proposed by BNSF. During negotiations with BNSF, the plan was revised to acquire less than half of the original properties. Instead of Grand Island Utilities paying the largest portion of the relocation expenses, BNSF will pay for most, in exchange for City land and crossing contracts on all crossings. The actual cost to the City will be about $200,000, while the cost to BNSF will be $2,300,000. A dramatic difference from the original proposal.

Overhead Distribution:

- In 2011, the Overhead Division was tasked with maintaining and upgrading the overhead distribution lines, which entailed 12,400 lf. of single phase line and 16,536 lf. of 3-phase being rebuilt. These upgrades eliminated old primary lines and secondary service wires to provide a safer and more reliable service to our customers. The upgrades also allow for more flexibility in the system with additional feeder ties. These benefits became evident during the Memorial Day wind storm. Only 17 poles and 12 transformers were lost, with the majority of the damage in a three block area.
- The Division's continuous efforts to keep vegetation clear of power lines were also a contributing factor for minor outages during storms and throughout the year. This was

accomplished with our own tree crew, and the use of five contractors clearing 29 sections of lines and removing 233 trees this past year.

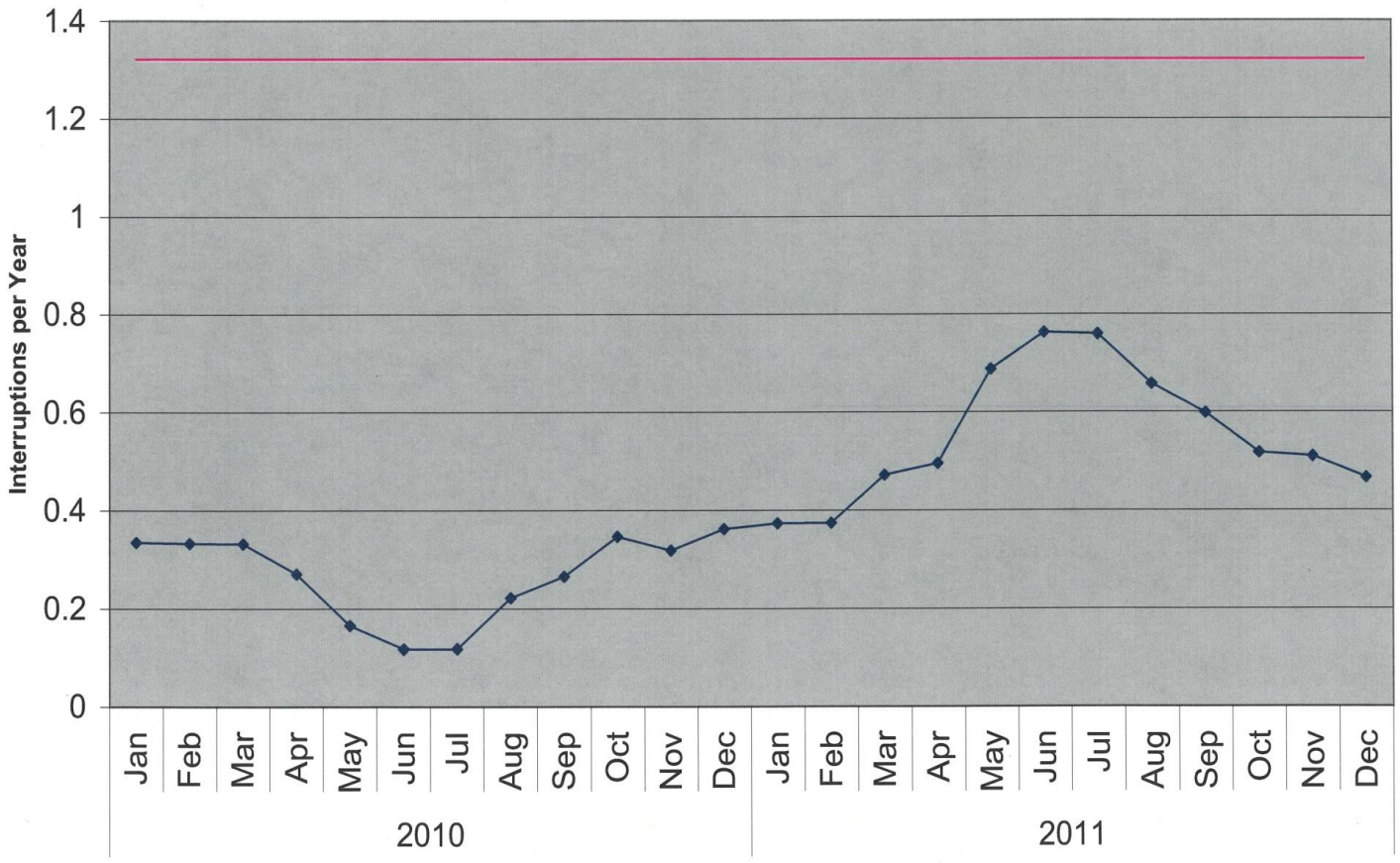
- The Line Crews installed or replaced 260 transformers, which has helped improve system reliability and power quality for utility customers as loads continue to increase.
- During the past year, the Overhead Division was challenged to keep up with the continuous theft of copper wire from the system. Approximately $31,000.00 was spent to replace grounds that were stolen from utility poles in the system.
- In 2011, work with BNSF consumed quite a bit of the division's time. Crews relocated 12 poles and anchors at five different locations to assist with the rail expansion.
- In an effort to continue to ensure safety while providing reliable service, the Overhead Division implemented pole climbing certification. This certification will ensure that all employees responding to electrical trouble calls are certified in pole top rescue.

Underground Distribution:

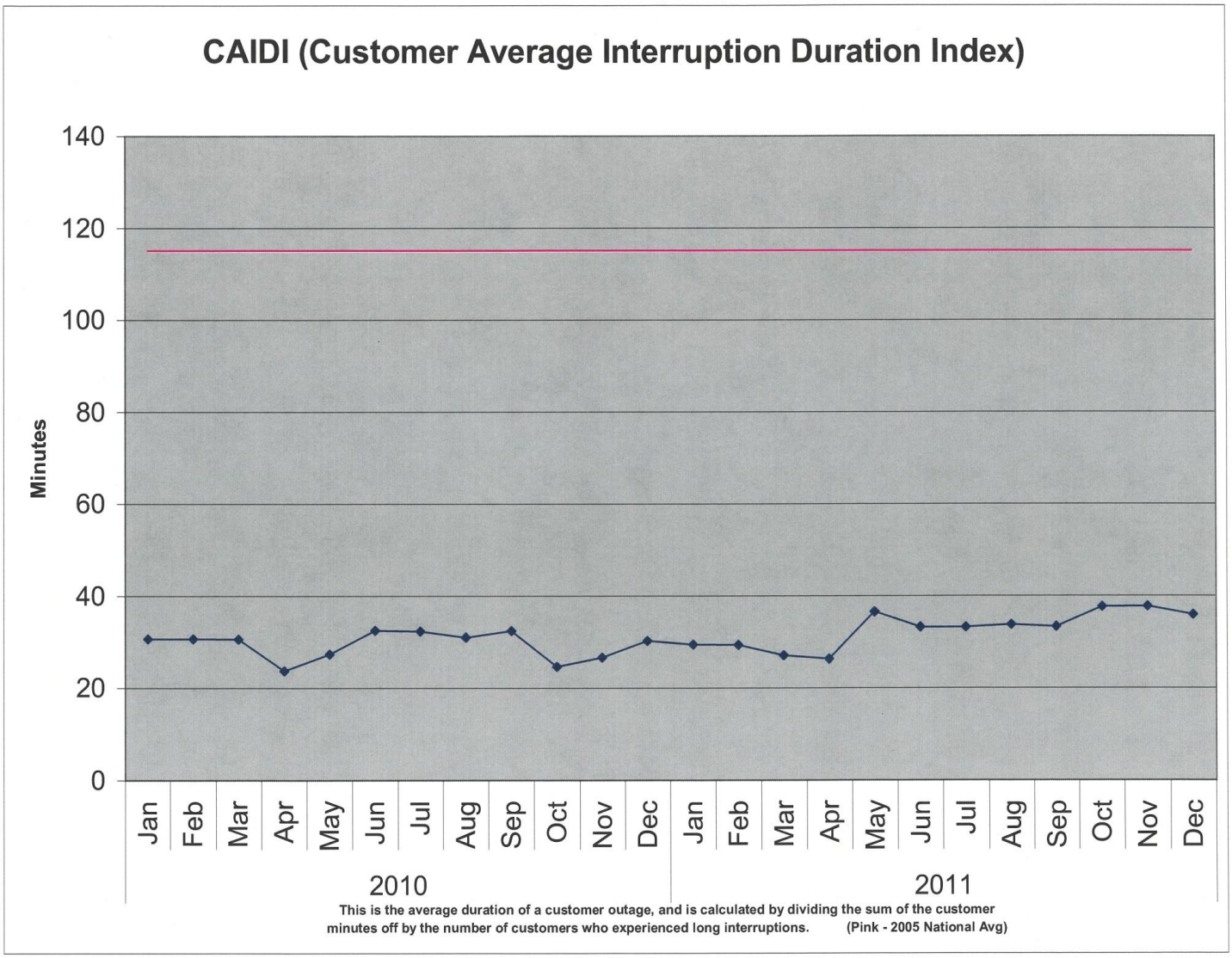
- Prioritization is a standard in the Utilities Department. Top priority is given to restoring power to customers, particularly, healthcare providers. This past year, priority was given to the Nebraska Veterans Home during an outage caused by a failure of their privately owned system. Aid was provided with department personnel, equipment and materials with subsequent clean up during a spring wind storm. Incidents such as this entail inspection of lines and the re-routing of existing circuits to restore as much electricity to the greatest number of persons in a short period of time. From the time of outage to restoration of power, a balance is sought concerning the health and well being of customers as well as the safety of staff.
- The next priority is given to maintaining a safe system. This starts with providing the service of locating buried electrical lines prior to excavation or other ground work being done to avoid damage or injury to personnel, property, or related equipment. The Underground Division received over 5,000 requests for locates in 2011. While this number is comparable to years past, with more electric lines being installed every year, even the same number of requests results in more locates actually performed. Maintenance of the physical protection of the system requires inspection and subsequent repair or replacement of a system that has normal degradation from rusting cabinets and various enclosures to the normal electrical degradation from rusting of cabinets and various enclosures to the normal electrical degradation of cable and components. Transformers and cables were replaced in the Allen Court/Allen Circle area, prompted by an outage due to cable failure.
- Once power restoration and safety needs have been met, new construction becomes the priority. Planning involves the layout for future development, providing electricity for construction and subsequent new services and determining the new electrical demand. Residential areas such as Fairway Crossings and continued lot development at Sterling Estates and Northview Subdivision took place along with increasing the size of transformers at LaRue Subdivision to meet "all electric" housing. Several tracks of land were subdivided, forming large residential lots and a new sand and gravel operation. Commercial development remained active throughout the City. A variety of restaurants and retail sales buildings, strip malls, and manufacturing companies built new buildings or increased the size of their electric services to meet the needs of additional electrical equipment.
- During the remaining time, efforts continue to replace existing transformers and cable in existing areas that were physically and electrically safe, but were starting to have "aesthetic issues", such as the loss of paint finish. The purchase of stainless steel transformers as well as increasing the repainting of stock transformers has been implemented in an effort to improve the look of the system and add to the physical life of the devices in the long term.

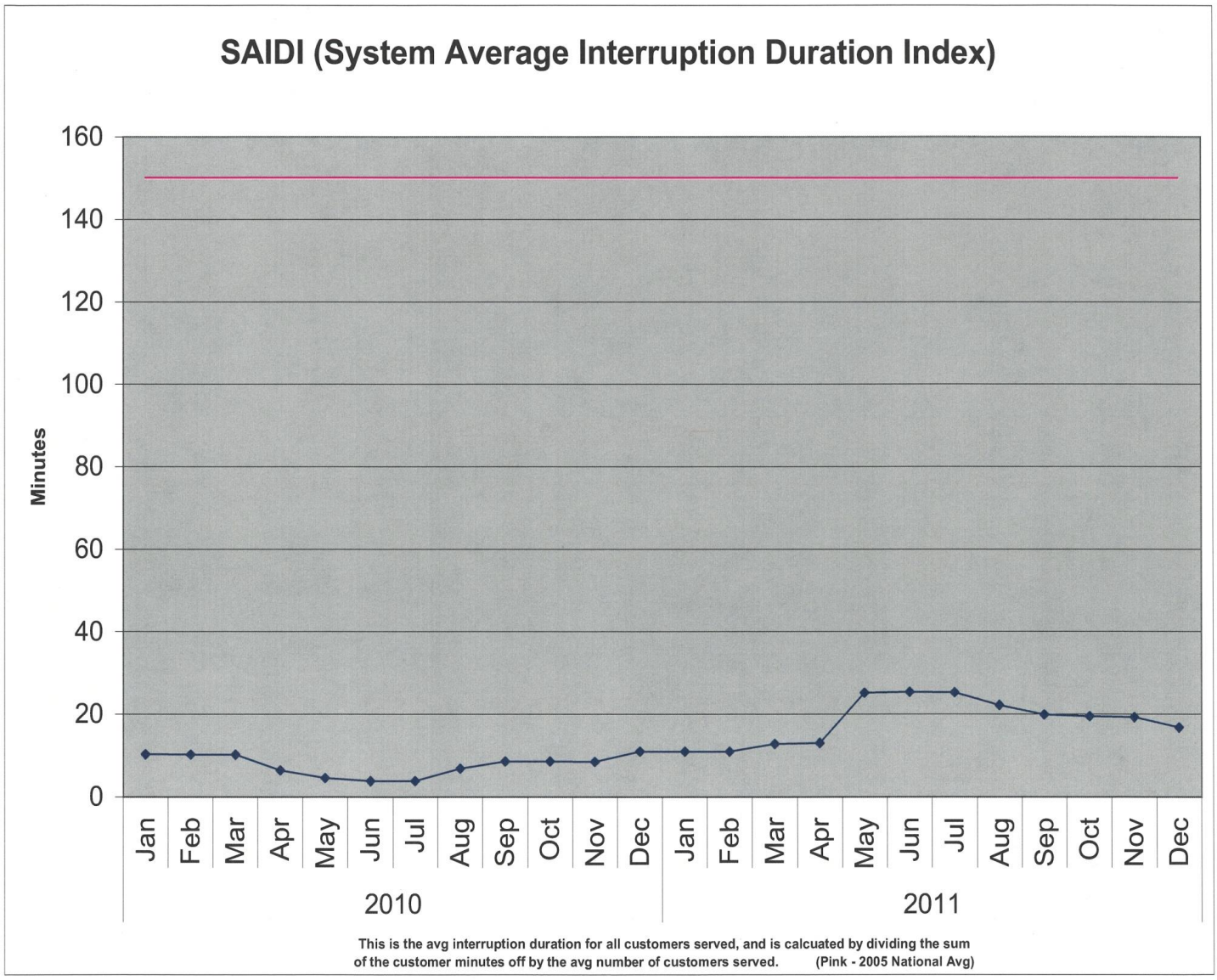
The Distribution Division continues to sustain system outages well below national averages.

SAIFI LONG (System Avg Interruption Frequency Index for Long Interruptions)



The number of times a customer is interrupted (>1 minute), averaged over all customers. Divide total customer interruptions by an avg of total customers served. (Pink - 2005 National Avg)


CAIDI (Customer Average Interruption Duration Index)
Minutes
140
120
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2010
2011
This is the average duration of a customer outage, and is calculated by dividing the sum of the customer minutes off by the number of customers who experienced long interruptions.
(Pink - 2005 National Avg)


SAIDI (System Average Interruption Duration Index)
Minutes
160
140
120
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2010
2011
This is the avg interruption duration for all customers served, and is calcuated by dividing the sum of the customer minutes off by the avg number of customers served.
(Pink - 2005 National Avg)