

# MAYOR'S NEIGHBORHOOD ROUNDTABLE SUMMARY

## April 13, 2015

Jon Carlson opened the meeting on Monday, April 13, 2015 at 5:30 p.m. in the Mayor's Conference Room, City/County/Building, in Lincoln, NE.

### Attendance

Thirteen citizens and five staff attended:

Jeff Schwebke -- Arnold Heights NA	Carl Tesch – Autumn Wood NA
Paul Johnson – East Campus CO	Rick Helweg – Eastridge NA
Kurt Elder – Haymarket NA	Scott Richert – Indian Village NA
Amy Karabel – Irvingdale NA	William Carver – Near South NA
Mike DeKalb – University Place CO	Bill Vocasek – West A NA
Lin Quenzer – Mayor's Office	Jon Carlson – Mayor's Office
Wynn Hjermstad – Urban Development Dept.	Mike Lang – Mayor's Office
Adam Rhoads – Health/KLLCB	Russell Miller – Lincoln Neigh. Alliance
Barb Fraser – Community Learning Centers	Daniel Dixon – Lincoln Electric System

### Welcome & Introductions, Volunteer to Take Notes

Everyone introduced themselves. Paul Johnson volunteered to take notes.

### Mayor's Comments

Mayor Beutler was not able to attend. Jon Carlson commented that “roads funds” include funding for street, sidewalk and trail projects.

### District Energy Corporation (DEC)

Daniel Dixson from LES and Mike Lang, Economic Development Coordinator from the Mayor's Office, presented information about the District Energy Corporation, or DED. DEC is a non-profit public corporation formed in 1989. It is a partnership between the State of Nebraska, City of Lincoln and Lancaster County. It is controlled by a five-member board of directors, with two members from the City, two from the county and one from Lincoln Electric System, the contractor hired to manage the DEC.

DEC originally intended to produce and distribute thermal energy in the form of steam and/or hot water for heat & chilled water for cooling for public buildings. There are four plants in the Lincoln area, serving the State Capitol & office buildings, the County–City Building, the West Haymarket area and the Lancaster County Jail Complex. **See Attachment 1.**

### Announcements

- Mike DeKalb reported that a seat is available on the Lower Platte South Natural Resources District Board.
- Mike also reported that the Historic University Place Art Festival will be held on April 25, 9 am to 5 pm, at N. 48<sup>th</sup> Street and St. Paul Avenue. The festival will include local and regional artists, live music and other entertainment, crafts and food. **See Attachment 2.**
- Adam Rhoads reported that the Lincoln Marathon will be run on Sunday, May 3<sup>rd</sup>. Keep Lincoln-Lancaster County Beautiful (KLLCB) is looking for volunteers to help keep the Lincoln Marathon a Litter Free Event. Residents from neighborhoods along the marathon route are encouraged to take part.

### Next Meeting

The next meeting of the Mayor's Neighborhood Roundtable will be May 11th at 5:30 p.m. The topic will be determined.

*Notes submitted by Paul Johnson.*

Published on *Prairie Fire - The Progressive Voice of the Great Plains*  
(<http://www.prairiefirenewspaper.com>)

[Home](#) > A Look at District Energy

## A Look at District Energy

By [Daniel Dixon](#) <sup>[1]</sup>

Imagine eating popcorn at Lincoln's Pinnacle Bank Arena and cheering on the Huskers as they take the basketball court on a frigid January afternoon, or applauding your favorite band as they return to the stage for an encore on a muggy July evening. Thousands of people already have enjoyed such events. If you're like most of them, you would focus on the action in front of you and wouldn't give much thought to the source of energy that keeps you comfortable during these events.

But for the folks behind the scenes, delivering that energy is of utmost importance. Just a few blocks from the arena, nestled between newly constructed parking garages in Lincoln's West Haymarket development, is a centralized district energy plant that produces enough energy to heat 500 and cool 1,800 typical residential homes. That facility is the District Energy Corporation's West Haymarket Central Utility Plant, and it delivers the energy needed to heat and cool the Pinnacle Bank Arena and surrounding buildings in the West Haymarket. A district energy system is a bit different from traditional heating and cooling systems and can provide additional benefits, as well.

### What is district energy?

District energy enables local production and distribution of energy for space heating, domestic hot water heating, and/or cooling for buildings. It includes a central plant and a distribution system, which is an underground network of insulated pipes that run from the plant to the buildings served. Equipment at the plant produces steam, hot water, and/or chilled water that is pumped from the plant through the distribution system to the end user. Buildings served by a district energy system do not use the boilers, furnaces, chillers, or air conditioners that are required by traditional systems. District energy does that work instead, providing valuable benefits. They include improved energy efficiency, high reliability, enhanced environmental protection, fuel flexibility, ease of operation and maintenance, decreased capital and life cycle costs, and improved architectural design flexibility that includes more usable floor space in buildings served.

District energy systems are typically located in urban areas where a high concentration of large buildings can easily be served from a central location. Often, large facilities such as an arena, government office building, or industrial processing plant serve as "anchor" loads for the system, allowing smaller retail or residential buildings to connect, as well. By combining multiple customer building loads and taking advantage of the resulting diversity, a district energy system can operate its equipment more efficiently than a traditional system. This higher efficiency results in lower fuel consumption, fewer air emissions, and lower energy costs, which benefit customers

and the community.

District energy plants can provide both heating and cooling, or just one or the other. District heating uses boilers, closed vessels that heat water to a desired temperature or generate steam, to provide heat. District cooling uses chillers, machines that remove heat from water using a refrigeration cycle, to provide cold or “chilled” water. Diagrams that show the basic configuration of district heating and cooling systems are shown in the figures.

Boilers often burn natural gas. However, many district energy plants have a variety of fuel options. Standard combustion boilers can use fossil fuels such as coal or oil, or renewable materials such as biomass from tree or other plant waste material. Methane gas recovered from landfills or wastewater treatment processes also can be burned by boilers. Burning waste material, such as refuse, is another alternative. Other heat sources used by district heating systems include electricity, geothermal and solar energy, and waste heat that is commonly derived from low-grade steam or exhaust gases used in industrial processes or electrical generating stations. The simultaneous use of heat energy for electric power production and district heating is called combined heat and power. It improves efficiency by 30 to 50 percent.

Chillers are most commonly driven by electricity. Some electrically driven chillers can be used as heat pumps to provide cooling in summer and heating in winter. If coupled with geothermal energy, system efficiency is improved. When steam and chilled water are needed simultaneously to provide heating and cooling throughout the year, the water is cooled by a steam absorption chiller or a steam turbine-driven chiller. Often, the steam used for these types of chillers would otherwise be released into the atmosphere, wasting useful energy. But when used by the district system to produce chilled water, overall efficiency increases. As in the case with CHP, this decreases exhaust emissions, and maximizes the money spent on fuel. Thus, large-scale district energy systems have the potential to get the most out of every energy source available, providing a benefit to the environment and an economic benefit to users.

## **What Is District Energy Corporation?**

DEC is a nonprofit, interlocal corporation located in Lincoln, Nebraska. It provides innovative, efficient, and low-cost utility services to facilities owned by the city of Lincoln, Lancaster County, the State of Nebraska, and facilities in Lincoln’s West Haymarket District. Due to DEC’s cost-of-service-based structure and use of efficient equipment, its overall energy rates are low. In addition, DEC manages a fuel purchase program that is structured to reduce the volatility of natural gas prices, which stabilizes heating expenses. This, too, helps keep energy rates low and helps DEC and its customers plan and predict their energy budgets.

The City of Lincoln and Lincoln Electric System, the local municipal electric utility, began investigating the district energy concept in 1984. Studies were conducted to determine the feasibility of district energy systems for downtown Lincoln and the Historic Haymarket District. On December 15, 1989, the city of Lincoln and Lancaster County formed and organized DEC under the State of Nebraska’s Interlocal Corporation Act and the Nebraska Nonprofit Corporation Act. It is governed by a volunteer, five-member board of directors with two city representatives, two county representatives, and an LES representative.

Since DEC had no employees, a mechanism was needed to enable access to the technical and

professional expertise needed to manage the corporation and operate thermal energy plants. The solution was identified in LES, which had experience operating a CHP plant that provided district steam heat to many commercial building in downtown Lincoln. A management agreement between DEC and LES was signed in 1989. The agreement directs LES “to supervise, operate, and manage the system and business affairs of the Corporation.” This arrangement provides DEC the resources needed to operate a utility, including equipment operators, financing specialists, accountants, rate analysts, engineers, administrative support, and general management. LES is fully reimbursed for the costs of these services.

## **Why Was DEC Formed and Why Did It Continue to Grow?**

The formation of DEC provided a vehicle that allowed the city and county to make investments in the heating and cooling infrastructure needed to support a significant expansion of the county/city government complex along Ninth Street between H and K streets. This included the upgrade of an existing boiler plant, which at the time provided heat to a single county/city building, and the construction of a new chiller plant. The chiller plant was added to the west side of the boiler plant. When the project was completed in 1991, the DEC County/City Plant provided chilled and hot water to the then new corrections facility and the then County/City Building (now the Hall of Justice building).

In 1997 significant corrosion was identified in the pipes that transported steam heat from the University of Nebraska-Lincoln City Campus to the Nebraska State Capitol. Due to the high cost of replacing these pipes, the State of Nebraska asked DEC to evaluate options for providing heating service. It was determined DEC could build a dedicated plant and associated distribution piping for much less than the cost of replacing the pipes. Construction of the DEC State Plant began in early 1999.

In 2008 Lancaster County residents voted to construct a new 779-bed County Adult Detention Facility west of downtown Lincoln. County officials asked DEC to evaluate energy production options for serving the facility. After evaluating ten different energy production technologies, DEC determined a geothermal-based heat pump system had the lowest life cycle cost. Construction on the DEC CADF Plant began in 2009.

In 2010 the citizens of Lincoln voted to construct a sixteen thousand-seat arena on the site of an old railyard located next to the Haymarket District. The proposed West Haymarket development was underway and, in addition to the arena, would include several private properties. The city asked DEC to evaluate the feasibility of constructing a district energy system to serve the development. After DEC completed the analysis, the city, represented by the Joint Public Agency, an interlocal organization created by the city and the University of Nebraska to manage the WHM development, decided constructing a district energy system was feasible. Construction began on DEC’s CUP in early 2012.

## **DEC Facilities**

DEC meets the heating and cooling needs of its customers with four energy plants, three in various parts of downtown Lincoln and one a few miles west. These facilities incorporate efficient energy management technologies to reduce the impact on the environment and minimize fuel costs. Examples include

- Thermal storage, where ice is produced on summer nights when electrical demand is low and then is stored until it is melted and used for cooling during the day when demand is high.
- Geothermal heat pumps, where energy is exchanged through a ground water loop, resulting in a higher efficiencies and lower energy consumption.
- Condensing boilers that burn 10 percent less natural gas than standard boilers.
- Economizer-mode cooling that uses outdoor air in the winter for system cooling instead of much more energy intensive chiller-produced energy.

Four buildings have been added to the County/City Plant system since it was commissioned. It now provides energy to the Lancaster County and City of Lincoln government complex, with 612,000 square feet of office and records storage space spread over six buildings. The plant uses a combination of chillers and thermal ice storage to produce chilled water for cooling. For heating, the plant uses dual fuel boilers capable of burning natural gas or oil to provide hot water and steam heat.

The State Plant became operational in 1999. It, too, uses dual fuel boilers, capable of burning natural gas or oil, and its boilers produce high-pressure steam heat to the State Capitol, Nebraska State Office Building, and State Administrative Office for a total of 1,010,000 square feet served.

The DEC CADF Plant was commissioned in 2012. It provides heating and cooling energy, as well as backup electrical service, to the new seven hundred-bed detention facility. The plant uses 667 geothermal bore holes drilled three hundred feet deep that supply energy to twenty-five heat pumps for heating and cooling.

Commissioned in September 2013 and dedicated in May 2014, the DEC CUP provides heating and cooling to 845,500 square feet of space in the newly developed West Haymarket district, which includes the Pinnacle Bank Arena (home to Nebraska basketball teams), retail stores, apartments/condominiums, hotel and office space. The CUP uses condensing boilers to produce hot water, high-efficiency chillers to produce chilled water, and economizer-mode heat exchangers to provide chilled water in the winter.

## **DEC, Streamlined Government**

DEC, through LES, is continuously evaluating opportunities to improve customer service while minimizing costs and environmental impacts. It is an excellent example of efficiency in government, providing innovative, efficient, and low-cost utility services to government agencies in Lincoln. DEC is an example of how a community can pool its resources to develop economical, environmentally sound energy infrastructure that will benefit the community for years to come.

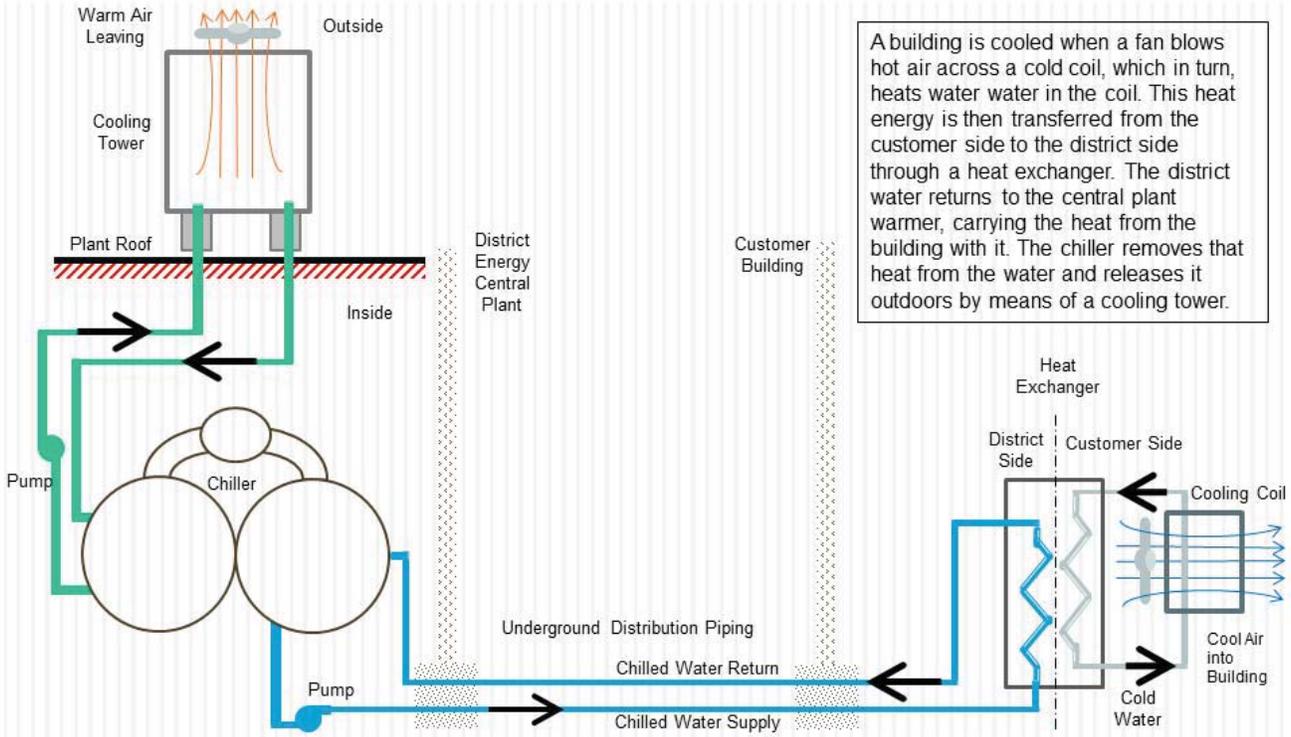
[December 2014](#) <sup>[2]</sup>

[The Environment](#) <sup>[3]</sup>

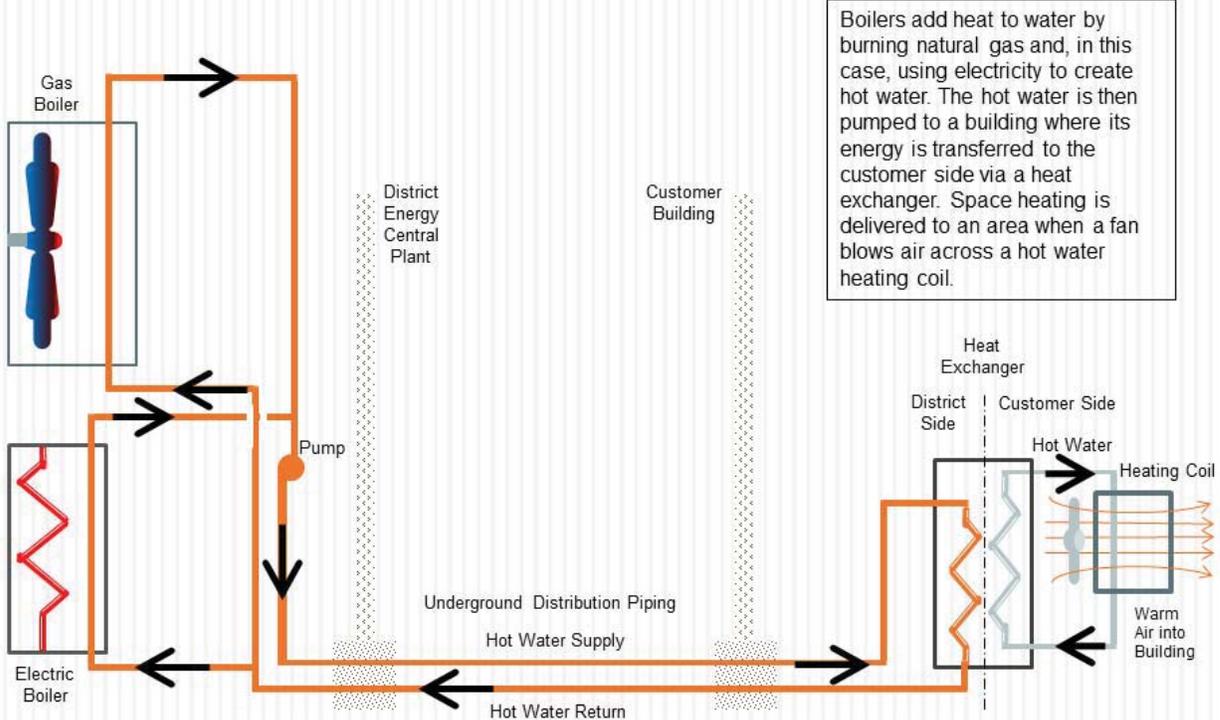
**Source URL (retrieved on Apr 30 2015 - 9:50am):** <http://www.prairiefirenewspaper.com/2014/12/a-look-at-district-energy>



# District Cooling System

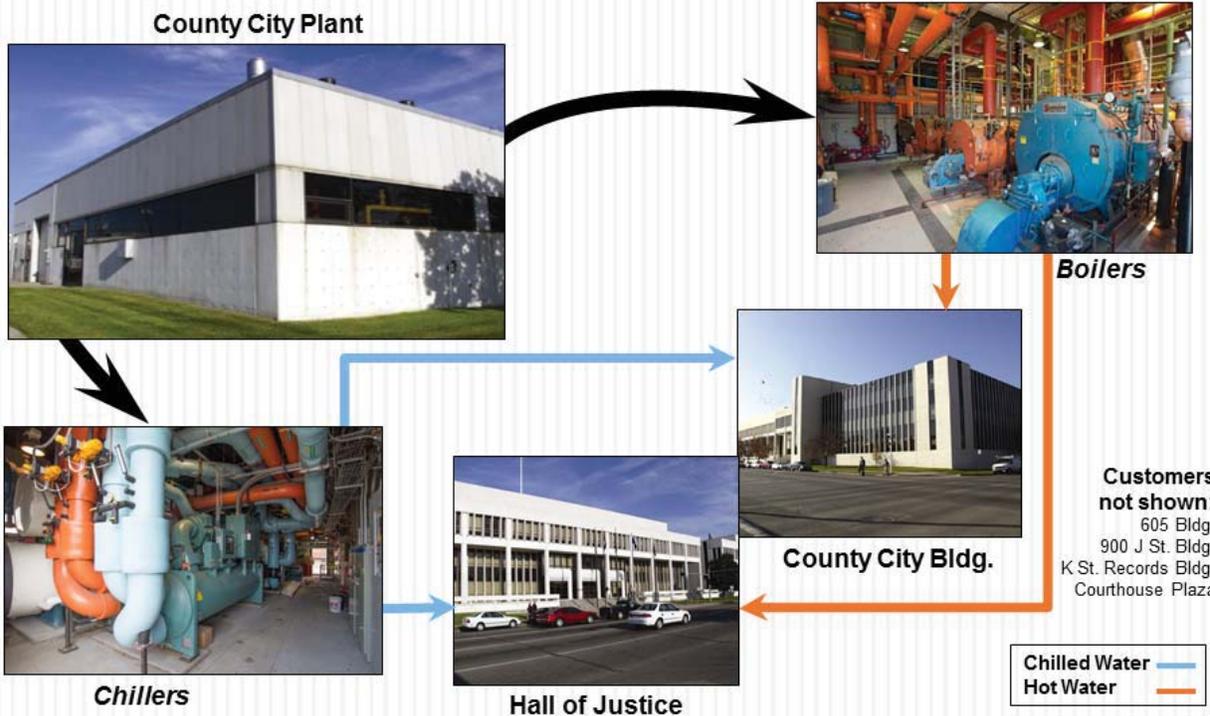


# District Heating System





# County City Plant



# West Haymarket Development



# CADF Plant



County Adult Detention Facility Thermal Plant



Emergency Power



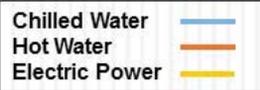
Diesel Generators



Geothermal Heat Pumps



County Adult Detention Facility



# State Plant



State Thermal Plant



Boilers



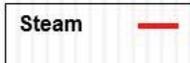
State Capitol



State Office Building



State Administration Office



# West Haymarket Central Utility Plant (CUP)



West Haymarket Central Utility Plant



Chilled Water — blue line  
Hot Water — orange line

Attachment 2

HISTORIC  
UNIVERSITY  
PLACE



# FESTIVAL

APRIL 25, 2015  
9 AM - 5 PM

N. 48TH & ST PAUL AVE  
LINCOLN, NE

regional artists  
entertainment  
LOCAL & CRAFTS  
live music  
STREET FOOD



 /universityplacebusinessassociation