Exhibit No.:	
Issue:	Smart Grid; AMI and AMR
Witness:	Edward C. Matthews
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Kansas City Power & Light Company
Case No.:	ER-2009-____
Date Testimony Prepared:	September 5, 2008

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. ER-2009-____

DIRECT TESTIMONY

OF

EDWARD C. MATTHEWS

ON BEHALF OF

KANSAS CITY POWER & LIGHT COMPANY

Kansas City, Missouri
September 2008

DIRECT TESTIMONY

OF

EDWARD C. MATTHEWS

Case No. ER-2009-____

Q: Please state your name and business address.

A: My name is Edward C. Matthews. My business address is 1201 Walnut, Kansas City, Missouri 64106.

Q: By whom and in what capacity are you employed?

A: I am employed by Kansas City Power & Light Company ("KCP&L") as Director, Smart Grid.

Q: What are your responsibilities?

A: Primary to my duties is the development and oversight of key drivers for the future energy distribution network ("Smart Grid") of KCP&L and Aquila, Inc. dba KCP&L Greater Missouri Operations Company ("GMO"). The companies' Smart Grid initiative involves new integrated technologies designed to better supply, manage, and enable more efficient use of energy both by the utility and the customer.

Q: What is involved in meeting these responsibilities?

A: Meeting these responsibilities involves identifying and evaluating existing and emerging technologies in the areas of advanced metering, distribution automation, grid communication networks, advanced control centers, demand response, energy efficiency, as well as the integration of renewable and distributed supply resources.

Q: Do you have responsibilities in addition to Smart Grid?

A: Yes. I also help facilitate KCP&L's research and development activities and resources supporting the industry's emerging technologies. Additionally, my expertise is called upon to provide input into corporate strategies like KCP&L's Strategic Initiatives and collaborate on company Master Planning, such as the Comprehensive Energy Plan and Sustainable Resource Strategy.

Q: Please describe your education, experience and employment history.

A: I graduated with a Bachelor of Science degree in Electrical Engineering from Southern Illinois University in 1985. I have a Masters in Business Administration from Illinois Benedictine University. I am currently active in several industry organizations and initiatives, and am a certified Project Management Professional ("PMP"). I have worked for KCP&L for five years, previously in the position of Director of Engineering and Asset Management. Prior to joining KCP&L, I served four years as a Senior Program Manager for Convergent Group, a former division of Schlumberger, which specialized in providing enterprise level system integration consulting and project management within the utility industry. Two years prior to working for Convergent Group, I was the Director of EDI Services for a technology start-up firm, Effective Data Solutions. My initial twelve years of utility experience was with Commonwealth Edison in Illinois, holding various positions, including field engineer, operations manager, engineering manager, construction manager, and information technology strategic planning manager.

Q: Have you previously testified in a proceeding at the Missouri Public Service Commission ("MPSC" or the "Commission") or before any other utility regulatory agency?

A: No, I have not.

Q: What is the purpose of your testimony?

A: The purpose of my testimony is to provide an introduction to KCP&L's Advanced Metering Infrastructure ("AMI") project. KCP&L does not currently seek an Adjustment for AMI, because it will not be implemented until 2009. However, it plans to do so in the future.

Q: Please describe KCP&L's AMI Project.

A: KCP&L's AMI project will build upon KCP&L's existing industry leading Automated Meter Reading ("AMR") infrastructure, upgrading and migrating the existing network from one-way communications to two-way communications as well as providing a two-way communications fixed network to customers in the former Aquila territory ("new customers"). We have started detailed planning relating to technical requirements, estimating and procurement. We anticipate AMI deployment will begin in 2009 with installation touching about 80% of our new customers completed by the end of 2010, and the entire project concluding by 2013. Schedule ECM-1 provides a diagram of the AMI project.

Q: What customer and operational benefits do you expect with the completion of the AMI Project?

A: The AMI project is expected to produce significant benefits for KCP&L, GMO and their customers. From a customer standpoint, AMI is a "customer technology" that will reduce costs, enable new service options and enhance the overall quality of service to our customers. The areas that currently do not have AMR meters will see the greatest improvements in customer service, efficiency of the distribution system and response to outage situations. However, it is anticipated that all customers will enjoy improvements

in the accuracy of meter reads, increased read frequency and schedule flexibility, and improved visibility of energy usage. For example, AMI will enable the customer to select dates for turn on/turn off requests without associated field visits, increase first call resolution through automated access to real time reads for billing inquiries and read resolution. The project will improve outage management with faster, more accurate notification and identification of outages, enable proactive customer notification of outages before they are reported, improve identification of unauthorized meter entry, more quickly identify potential service diversions, and improve accuracy and availability of on-line usage information to address customer billing and usage inquiries. AMI will improve availability of detailed usage pattern data to audit energy consumption, and promote expansion of options for customer demand response and efficiency programs, which will encourage and enable customers to participate in energy management, energy efficiency and cost savings.

Once in place, AMI will enable the capture of interval usage data, the use of dynamic pricing models, load limiting remote disconnect and reconnect, net metering and Home Area Network connectivity. The system has the capability to program and configure the meters "over-the-air" to update dynamic or time of use rate schedules, demand intervals, and load profile intervals remotely without visiting the meter. In addition to enabling two-way metering applications, AMI can transmit reactive power, voltage and meter diagnostics based upon the advanced meter's functionality to measure, and store and report this information.

The AMI system is also fully capable of supporting load control devices connected directly, using third party applications, to event based switches, such as pool

pumps, water heaters and air conditioners. AMI technology supports the ability for further distribution automation integration and is interoperable with and can communicate with most distribution automation and sensor devices. Typical distribution automation ("DA") devices include capacitor banks, switches, fault indicators and distributed generators.

Finally, from a grid planning perspective, KCP&L will leverage the system and load data to improve capacitor bank analysis and control schema to improve power factor and reduce reactive power; improve our ability to model primary and secondary distribution systems to effectively deploy distributed resources; and target existing and future energy efficiency and demand response programs. AMI will enhance KCP&L's ability to remotely perform transformer and conductor size and loss optimization analysis to reduce system losses, as well as enhance voltage regulation capabilities for consumer consumption and allow universally applied distribution system loss optimization. Each of these new functions will provide a direct benefit to KCP&L and its customers.

Q: Why is the AMI project important to KCP&L?

A: As provided in GPE's filings related to the Aquila acquisition, we expect the AMI project to provide identified synergy savings that will be shared with our customers. The expansion of our AMI network will enable more efficient operations. Additionally, AMI will enable our Smart Grid solutions of the future with the technology to foster the efficiency, stability and reliability necessary to better manage energy.

Q: What timeframe has KCP&L established for the AMI project?

A: KCP&L will employ a five phase plan to provide enhanced benefits of the AMI system to customers in a defined and systematic manner. Our plan calls for deployment to begin in

early 2009 and extend to outlying rural areas in our service territory by 2013. Schedule ECM-2 provides a detailed deployment schedule.

Q: What is the scope of each of the five phases?

A: **Phase One,** "Kansas City Metro and Large Communities," consists of new service territory and includes customers in the Belton, Blue Springs, Lee's Summit, Liberty Platte City and Saint Joseph service territories. Deployment is to begin in early 2009 and will benefit over 200,000 customers. The high population density in these areas with established meters allows the greatest number of meters to be automated in the least amount of time. Importantly, this phase will extend the AMI network and meters to the KCP&L service area near Blue Springs, where no AMR infrastructure exists today.

PhaseTwo, the "Community" phase, is comprised of the towns of Warrensburg, Marshall, Sedalia, Clinton and Nevada, Missouri; and, Louisburg and Paola, Kansas. This phase includes larger communities and population centers in KCP&L's north, east and southeast districts in Missouri and the south district in Kansas. Phase 2 extends AMI benefits to approximately 45,000 additional customers. Like Phase One, most of these communities are densely populated and can be automated with the two-way wireless network. However, they will require remote deployment operations since they are located some distance from the metropolitan Kansas City area. The rate of deployment will likely be slower than in Phase One because of irregular population densities.

Phase Three, the "Rural" phase, includes the rural expansion territory and KCP&L's south and east districts contiguous to the Phase Two Communities. To the extent the proposed technology can provide reliable service in these rural areas, we anticipate reaching approximately 25,000 customers in this phase. Due to the sparse

population density, implementation will be slower than the first two phases. Also, KCP&L anticipates that the wireless network can be extended into these rural areas after the Phase One and Two areas are established.

Phase Four, the "Extended Rural" phase, includes all other customer service areas not included in Phases One, Two or Three and covers nearly 35,000 customers in sparsely populated rural areas. Our plan accounts for the contingency that Phase Four may require alternative technology than that currently identified, based on experience gained during AMI installations in earlier phases.

Phase Five, the "Kansas City Power & Light Metro" area, includes customers in the Northland, F&M, Dodson, Johnson County and Southland service territories. Phase Five conversion will consist of AMI system deployment in the KCP&L growth areas of Missouri and Kansas and strategic conversion in the Metro area from the existing AMR system to enhanced AMI services.

Q: When will customers begin to receive these benefits?

A: With the completion of the Phases One and Two we anticipate converting about 85% of our new customers to the automated meter reading system. KCP&L will heavily leverage its existing AMR back-office integration technology and operational processes to gain immediate benefits. Also, KCP&L expects to leverage the installed AMI as a foundation for future projects that will provide increasing levels of benefits to our customers at a lower cost, such as applications for load control, in-home displays, programmable thermostats, and time-of-use and or real-time pricing communication.

Q: How will KCP&L allocate the investment for project costs across multiple service jurisdictions?

A: Project costs for the fixed network will be allocated by the installed location of the network equipment. Meter and communication costs will be allocated by jurisdiction of the metered customer. Schedule ECM-2 provides detailed allocation calculations.

Q: Are you asking for an adjustment?

A: Not at this time.

Q: Does that conclude your testimony?

A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Kansas City Power & Light Company to Modify Its Tariff to Continue the Implementation of Its Regulatory Plan	)))	Case No. ER-2009-____

AFFIDAVIT OF EDWARD C. MATTHEWS

STATE OF MISSOURI)
) **ss**
COUNTY OF JACKSON)

Edward C. Matthews, being first duly sworn on his oath, states:

1. My name is Edward C. Matthews. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Director, Smart Grid.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Kansas City Power & Light Company consisting of eight (8) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

Edward C. Matthews

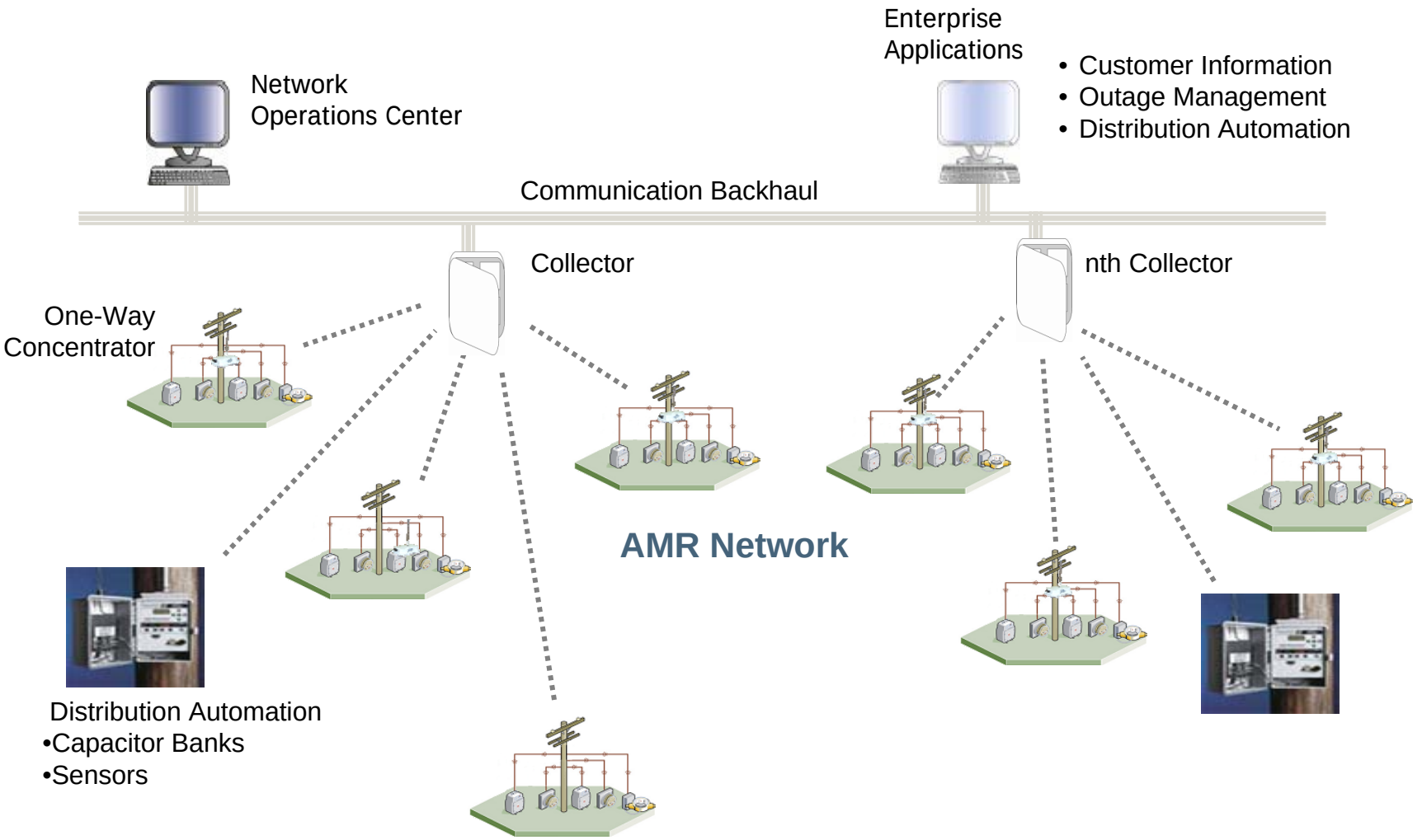
Subscribed and sworn before me this 11 day of August 2008.

Notary Public

My commission expires: April 9, 2011

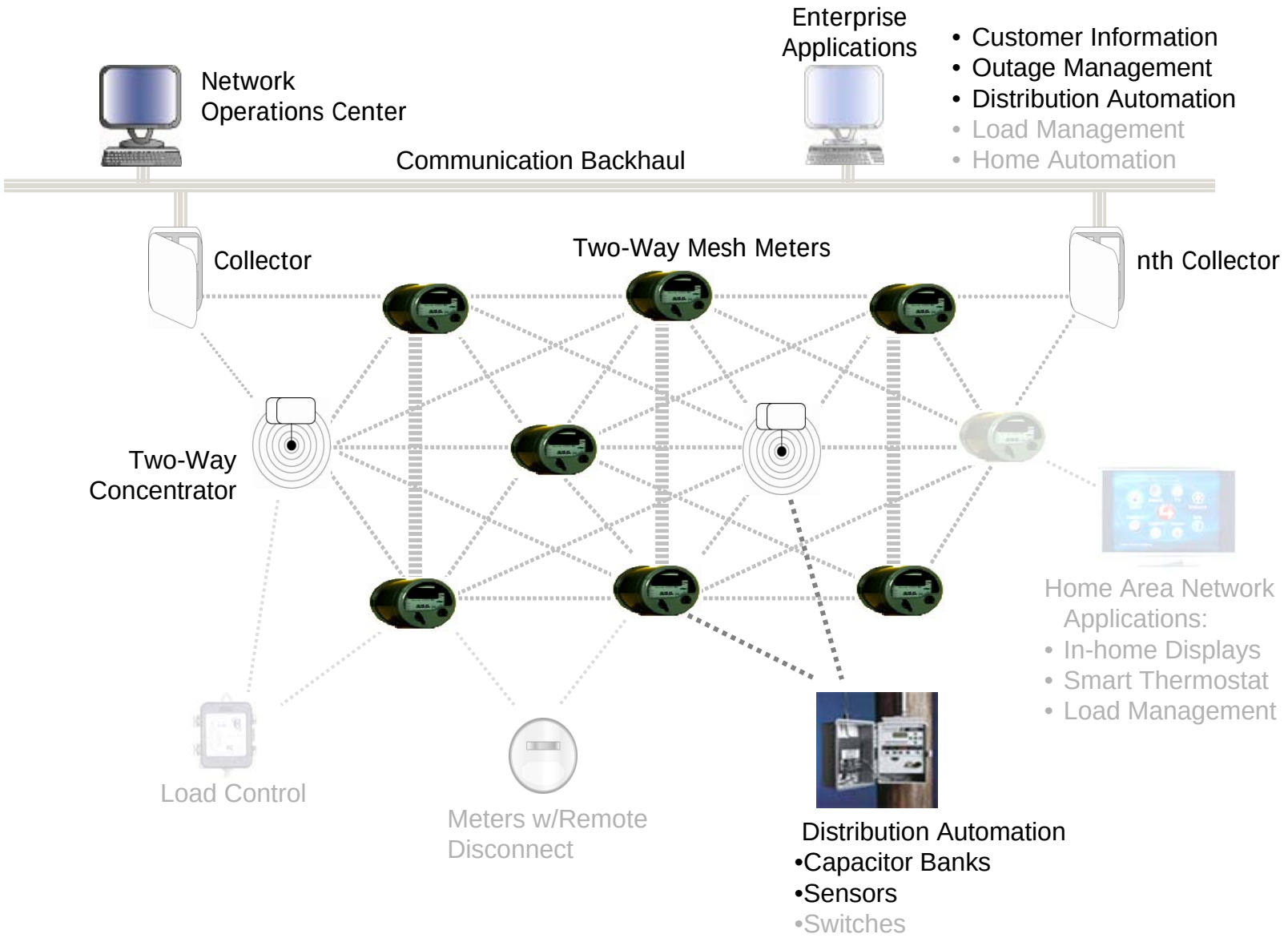
RUTH EVANS
Notary Public, State of Missouri
Clay County
Commission # 07032022
My Commission Expires April 09, 2011

KCP&L – Existing AMR Network

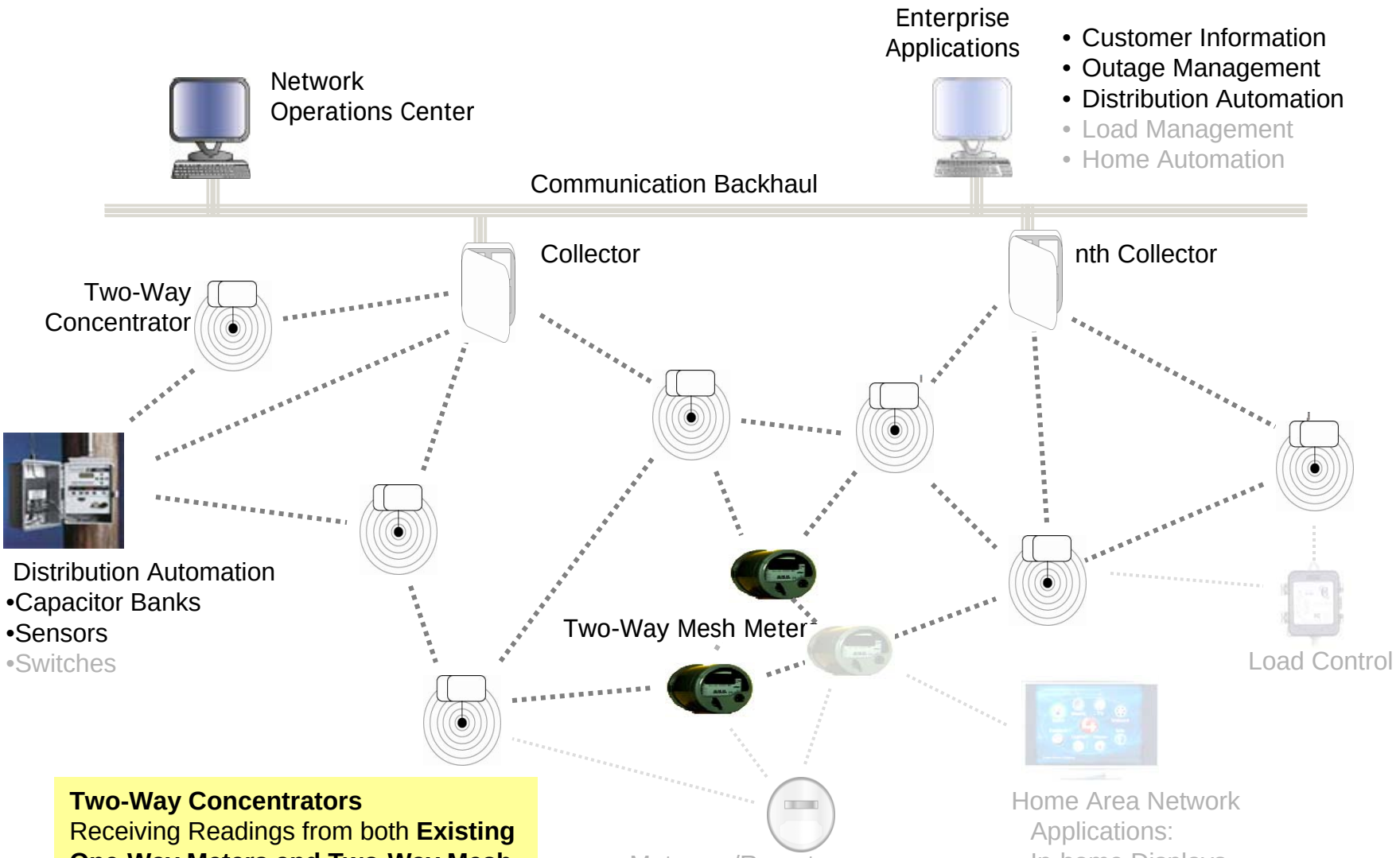


One-Way Concentrators
Receiving Readings from **One-Way Meters**

KCP&L – AMI Network (Expansion Area)



KCP&L – AMI Network (Conversion Area)



Two-Way Concentrators
Receiving Readings from both **Existing One-Way Meters and Two-Way Mesh Meters**

KCP&L – AMI Project Schedule

Jurisdiction	District	Service Center	2009	2010	2011	2012/13
MOPS	Metro	Belton Blue Springs Lee Summit Liberty Platte City	Phase 1	Phase 1		
SJLP	North	Saint Joseph Mayville Trenton	Phase 1	Phase 2	Phase 3	Phase 4
MOPS	East	Sedalia				
KCPL-MO	East	Marshall				
MOPS	Southeast	Warrensburg Clinton Nevada HRLexington				
KCPL-KS	South	Paola				
KCPL-MO	Metro	Northland F&M Dodson Johnson County Southland		Phase 5		