BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

DIRECT TESTIMONY OF

WILLIAM P. HERDEGEN, III

ON BEHALF OF
KANSAS CITY POWER & LIGHT COMPANY

IN THE MATTER OF THE APPLICATION OF
KANSAS CITY POWER & LIGHT COMPANY
TO MAKE CERTAIN CHANGES IN
ITS CHARGES FOR ELECTRIC SERVICE

DOCKET NO. 12-KCPE-764-RTS

I. INTRODUCTION AND PURPOSE

Q: Please state your name and business address.

A: My name is William P. Herdegen, III. My business address is 1200 Main Street, Kansas City, Missouri, 64105.

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

A: I am employed by Kansas City Power & Light Company ("KCP&L" or "Company") as Vice President, Transmission and Distribution Operations.

Q: What are your responsibilities?

A: My management responsibilities include the maintenance and operation of the transmission and distribution ("T&D") systems of KCP&L and KCP&L Greater Missouri Operations Company ("GMO").

Q: What is the purpose of your testimony?

A: The purpose of my testimony is to describe KCP&L's investment in Distribution Automation and Smart Grid technologies and to request the Commission include in KCP&L's revenue requirement the Kansas jurisdictional share of costs for establishing, training, and sustaining a new technical work group called Distribution Field Intelligence and Technical Support ("DFITS") that focuses on Distribution Automation equipment. KCP&L seeks the development of this work group to more efficiently manage the increasingly complex technologies being deployed on the distribution system. In my testimony I will describe Distribution Automation, including the current status of Distribution Automation management at KCP&L, and explain why the development of the DFITS work group will lead to long-term efficiencies that will benefit our customers. My testimony provides support for the annual operations and maintenance ("O&M") costs related to the DFITS work group included in Schedule JPW-4 attached to the Direct Testimony of Company witness John P. Weisensee (adjustment CS-49), and the capital costs related to this work group included in Plant in Service on Schedule JPW-2, also attached to Mr. Weisensee's Direct Testimony. But first, I will begin by providing the Commission some general information regarding my background.

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

A: I graduated from the University of Illinois, Champaign-Urbana in 1976 with a Bachelor of Science degree in Electrical Engineering. In 1981, I received my M.B.A. from the University of Chicago. I have over thirty-five years of experience in the electric utility industry. I began my utility career at Commonwealth Edison and, over the course of more than twenty years, held various positions, including field engineer, district manager,

business unit supply manager, operations manager, and vice president of Engineering, Construction & Maintenance. I later served as chief operating officer for Laramore, Douglass and Popham, a consulting firm providing engineering services to the electric utility industry. Prior to joining KCP&L, I was vice president of Utility Practice at System Development Integration, an IT consulting firm that focused on the development and implementation of technology systems. I joined KCP&L in 2001.

Q: Have you previously testified in a proceeding before the Kansas Corporation Commission ("Commission" or "KCC") or before any other utility regulatory agency?

A: Yes, I have previously testified before the KCC in Docket Nos. 04-KCPE-1025-GIE, 05-KCPE-086-TAR, 06-KCPE-828-RTS, 07-KCPE-905-RTS, 07-KCPE-1064-ACQ, 09-KCPE-246-RTS, and 10-KCPE-415-RTS. I have also provided testimony before the Missouri Public Service Commission.

II. THE DFITS WORK GROUP

Q: Before you explain the need for and benefits associated with the development of the DFITS workgroup, will you please first define Distribution Automation?

A: Yes. Edison Electric Institute ("EEI") defines automated distribution as a system that provides:

> monitoring, control and information on distribution equipment which includes switches, capacitors, protection devices, voltage regulation devices, and devices on the customer site.[1]

[1] *Glossary of Electric Industry Terms*, Edison Electric Institute, (April 2005), p. 7.

EEI continues by explaining that,

> [c]ustomer site devices might include generation, Demand Side Management equipment, capacitors, high speed switching devices, and any other power quality and/or reliability devices that are connected to the distribution system.[2]

I would add that an important enabler for "monitoring, control, and information on distribution equipment" is the utilization of two-way communication system(s). Two-way communications systems have become integral to automated distribution equipment, and in order to efficiently and effectively perform Distribution Automation activities some level of communications system expertise is necessary.

KCP&L has been investing in Distribution Automation and Smart Grid technologies for more than a decade. We have been progressive in the application of new and smarter technologies to improve safety and reliability of service. We also have been very prudent in applying technologies to the distribution grid by using pilot programs and demonstrations prior to system-wide deployments. We were one of the first in the nation to deploy Automated Meter Reading ("AMR") technology in the mid-1990s, among the first to leverage AMR communications for Capacitor Automation,[3] the first to deploy two-way cellular communications to our entire underground network in Kansas City, Missouri, one of the most aggressive in deploying two-way cellular communications to a wide array of distribution equipment, and are one of the few recipients for a U.S. Department of Energy Regional Smart Grid Demonstration Grant.

These upgrades have served our customers and KCP&L very well. In order to continue deployment and maintenance of this specialized, high-tech equipment, a new

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[2] *Id.*

work group that focuses on Distribution Automation equipment in the field is necessary. We are requesting that the Commission include in the Company's revenue requirement in this rate case the Kansas jurisdictional share of the cost of establishing, training, and sustaining this new technical field group, *i.e.*, payroll costs, employee-related benefit costs, capital costs for necessary equipment, and O&M costs for the DFITS work group.

Q: What work groups exist today related to high-tech Distribution Automation field technician work, and how are they functionally aligned?

A: *Figure 1* below shows a functional depiction of how the KCP&L and KCP&L GMO Transmission and Substation ("T&S") and Distribution business functions are broken down. From a high-level, functional view point, the T&S business is supported by the following work groups: (a) T&S Construction and Maintenance; (b) T&S Field Operations; (c) T&S Engineering; and (d) the Instrument/Relay group. The Distribution business is supported by: (a) Distribution Construction and Maintenance; (b) Distribution Field Operations; (c) Distribution Engineering; and (d) the Instrument/Relay Group. The Instrument/Relay Group currently supports both the T&S and Distribution businesses as I will explain further below.

[3] Capacitors are used on the distribution system to manage circuit voltage and reactive power. Capacitor Automation is where smart controllers and two-way communications have been installed to a capacitor on the distribution system.

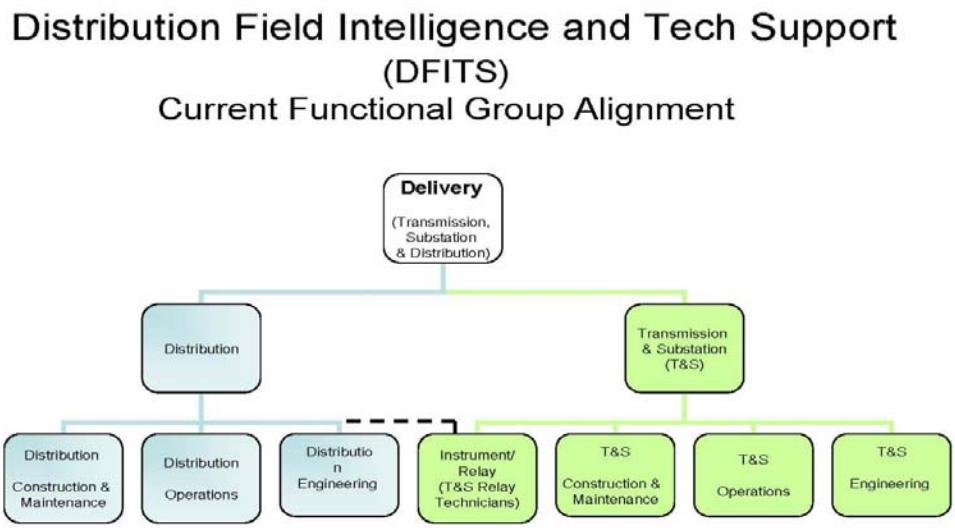

Figure 1 – Current Functional Group Alignment

Each functional group is comprised of personnel who are primarily trained for and dedicated to performing duties related to their specific work group. For example, T&S Construction and Maintenance is comprised of substation mechanics who build and maintain T&S equipment. T&S Operations is comprised of substation operators who operate T&S equipment. T&S Engineering is comprised of engineers who focus on the planning, design and development of the transmission system utilizing T&S equipment. On the Distribution side, Distribution Construction and Maintenance is comprised of line workers who build and maintain distribution equipment. Distribution Operations is comprised of line worker/operators who operate distribution equipment. Distribution Engineering is comprised of engineering personnel who focus primarily on planning, design and development of the distribution system. Finally, the Instrument/Relay group

is comprised of T&S relay technicians who currently support T&S control systems as well as automated distribution equipment. As you can see by *Figure 1* above, from a business function perspective, the Instrument/Relay group falls under the T&S business function. However, as I will discuss later in greater detail, because these technicians are currently the most qualified for performing the complex Distribution Automation function, the Instrument/Relay group is providing support for both the T&S and Distribution business functions.

Figure 2 below introduces the DFITS group under the Distribution business function[4]. The DFITS group will have distribution field technicians who focus solely on distribution equipment, and support and interface with the other distribution-specific functions. This will allow the T&S relay technicians to return their focus to the transmission side of the business.

[4] *Figure 1* and *Figure 2* depict functional alignment. Actual organizational reporting structure has not yet been established for DFITS.

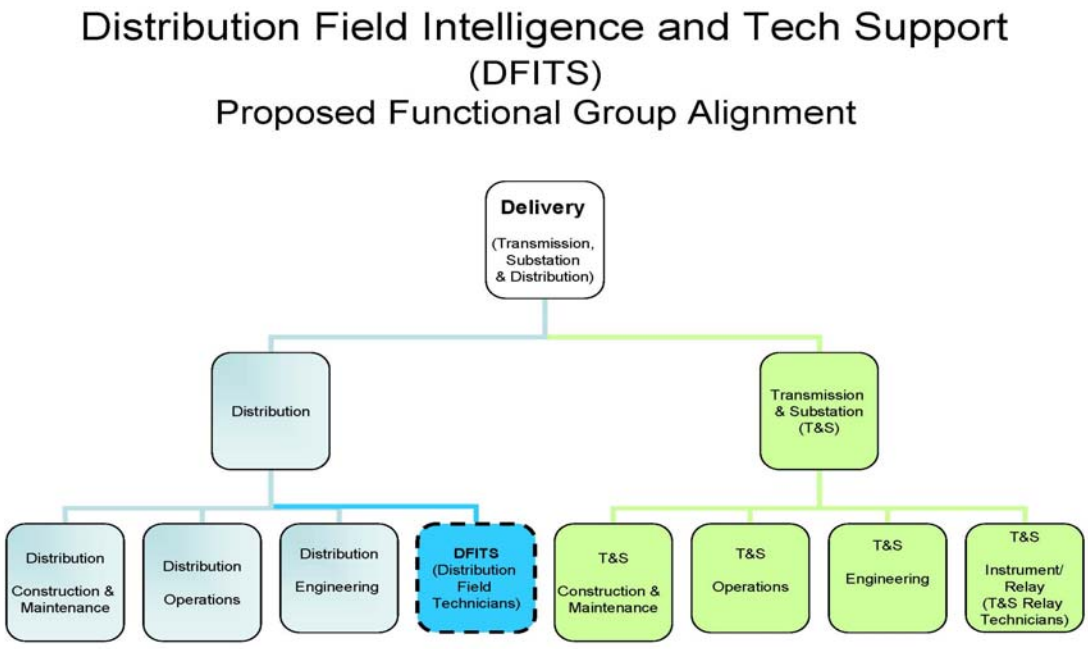

Figure 2 – Proposed Functional Group Alignment (including DFITS)

Q: You indicated that the T&S relay technicians are currently supporting Distribution Automation, will you please expand upon that discussion?

A: Yes. As noted above, KCP&L's high-tech Distribution Automation work is handled by our Instrument/Relay Group. The T&S relay technicians within the Instrument/Relay Group perform the field work on a variety of KCP&L systems, which include protective equipment, electronic relays, supervisory control and data acquisition ("SCADA") communications and controls, and an Energy Management System ("EMS") that supports the T&S equipment. As is the case with most utilities, the Instrument/Relay Group's historical focus has been on T&S equipment. Smart Substation equipment typically is connected to the EMS for control and monitoring by system operators. The Smart Substation equipment is typically hardwired to control panels and equipment in the

substation control house, and the T&S Relay Technicians are specialized in installing, maintaining, and troubleshooting this equipment. Since the main focus for T&S Relay Technicians has been on T&S equipment, organizational interfaces and structure has historically focused around support of other T&S focused work groups and processes.

As intelligent electronic devices began to be deployed on the distribution system, it was fairly natural to stretch the T&S Relay Technician role to include Distribution Automation equipment. Work on the Distribution Automation equipment was initially a "side job" for the T&S Relay Technicians, as the quantity and complexity of the work early on was minimal. However, distribution equipment is installed outside of substations on poles and in manholes, requiring the T&S Relay Technicians to increasingly coordinate with the Distribution-side personnel such as those within the Distribution Operations, and Construction and Engineering work groups, particularly for pole-mounted equipment. Because of the increasing interaction with the Distribution-side personnel and the increasing complexity of the Distribution Automation equipment, having a dedicated work group for Distribution Automation will allow for greater long-term work group efficiencies.

Q: How will the DFITS group differ from KCP&L's existing work groups?

A: The DFITS will differ from the other work groups from the standpoint that it will (1) focus training specifically on sophisticated equipment applied to the distribution system in order to handle Distribution Automation and Smart Grid controls, which will free up our existing Instrument/Relay group to focus solely on T&S controls and equipment; and (2) be significantly more technical than traditional distribution line workers and field operators. The typical line worker is more of an electrician and

mechanic. The DFITS group will support and interface with the other Distribution functional areas in a manner similar to how the Instrument/Relay group supports the T&S functional areas on the T&S systems.

Q: Why does KCP&L need to change the current work group structure?

A: KCP&L's distribution system is evolving with changes in the industry. Our work groups need to evolve to match these changes. As the number, variety, complexity, and interoperability of distribution devices has increased, and will continue to increase, a group of technicians is needed to focus specifically on Distribution Automation and Distribution Smart Grid systems in the field. This new group of technicians will support the Distribution Engineering group in a manner similar to the way in which the Instrument Relay group supports the T&S Engineers. In other words, adding the DFITS work group will create a balanced Distribution business function that is equivalent to the T&S business function (*See Figure 2* above). Experience leads KCP&L to believe that great benefit can be derived from a group of specialized technicians focused on a particular functional area, as such a group leads to long-term operational efficiencies which in turn leads to greater reliability of service for customers.

Like most utilities, KCP&L organizes many activities around T&S systems and the distribution system separately. We have specialized groups for construction and maintenance and for operating equipment in these arenas. Introduction of automation to the distribution system has pulled our T&S Relay Technicians across those areas of specialization.

Although this was a logical way to start, it is not our industry's best practice. T&S systems and the distribution system have unique characteristics that need to be fully

understood by field technicians. The universe of automated field equipment is simply too large to expect a single technician to master both T&S and distribution automated equipment and control systems going forward.

Q: If distribution knowledge is key to efficiently managing Distribution Automation, why not utilize existing distribution line workers or distribution operations personnel to perform this work?

A: Due to their distribution system experience, we expect to draw candidates from these groups for the DFITS work group. However, while today's line worker understands how to build and operate the distribution system, he does not know how to program and troubleshoot electronic controls and communications equipment. Training such a large workforce in this specialized area would be expensive compared to the cost of training a smaller, specialized group. Also, it is likely that each individual in a large workforce will not utilize the new skills on a regular basis, introducing greater opportunity for errors.

Q: On what type of equipment does KCP&L anticipate the DFITS group will work?

A: The types of distribution equipment controls, devices, and communications equipment on which KCP&L anticipates the DFITS group will work includes:

- Capacitors;
- Switching Equipment;
  - S&C SCADAmate®;
  - Reclosers;
  - S&C IntelliRupter Pulsecloser®;
  - Pad Mounted Automated Switchgear;
  - S&C Vista Gear®;
  - Solid Dielectric Underground Switches;
  - Other Motor Operated or Automated Switches;
- Line Regulators;
- Communicating or Automated Faulted Circuit Indicators;
- Voltage and Line Current Monitors;
- Intelligent Electronic Device ("IED") Radios and Communications;
- AMI or AMR Communications Equipment;

- Meter Communications to other (non-AMI) Devices (Zigbee, etc.);
- Underground Network Automation; and
- Other distribution equipment similar to the above listed items.

Q: What is the scope of work that KCP&L anticipates for the DFITS group?

A: The anticipated scope of work on which the DFITS group will focus includes:

- Commissioning[5] Distribution Controls and Distribution Automation equipment listed in the previous answer;
- Installing and verifying settings in Distribution Controls – both in the office and in the field – under close direction of appropriate engineering groups;
- In-field troubleshooting of Distribution Controls and Communications issues;
- Minor/simple in-field repairs or control exchanges;
- Coordinating field meets with other groups to ensure appropriate resources are planned and available for productive in-field work;
- Responding to non-emergency alarms from Distribution Controls. (First responders for lights-out or other emergency situation remains with Distribution System Operations.) May be called upon to assist Operations in emergency situations;
- Performing Alarm-Driven Distribution Control Maintenance – directed and prioritized by supervision;
- Performing Routine or Time-Based Maintenance on Distribution Controls:
  - Battery replacements;
  - Radio Upgrades;
  - Hardware Upgrades; and
  - In-field Firmware or Software Upgrades (that can NOT be performed remotely).
- Completing and/or updating appropriate Distribution Control paperwork or electronic forms or electronic databases/systems as directed;
- De-Commissioning Distribution Controls and equipment;
- Participating in system restoration events (SERP, Storms, emergency situations, apparent equipment malfunctions); and
- Following all appropriate safety and lock-out, tag-out procedures and policies.

Q: Will the DFITS group need special equipment and vehicles?

A: Yes. The DFITS group will require a variety of sophisticated test equipment and tools necessary to support the scope of work and distribution control equipment. Appropriate vehicles, including vans, 4x4 pickup trucks, and one light duty bucket truck, will be

[5] Commissioning is the process of testing equipment in the field prior to placing it into service.

required to support the identified workforce and scope of work. I discuss these needs in more detail later in my testimony.

Q: Will the DFITS group require any support personnel or supervision?

A: Yes. We anticipate needing a Supervisor and an Analyst for the group.

Q: What functions will be performed by the DFITS Analyst position?

A: One of the benefits of Distribution Automation is the ability of the equipment to provide status and condition data to the Company's personnel and systems. Much of this data can be used for condition-based maintenance,[6] thereby reducing costs associated with simple time-based maintenance.[7] Condition-based maintenance information can be used to assess equipment health and refine maintenance programs. The Company can plan maintenance work when equipment needs maintenance, rather than inspecting equipment that currently needs no maintenance.

The Company's real time operations systems focus attention on outages and other critical conditions that pose imminent risks. Our Distribution System Operations ("DSO") personnel monitor and manage equipment for these critical or imminent conditions. Other equipment status and condition information is important to timing and scheduling condition-based maintenance activities to keep equipment operating at optimal performance, and to prevent future critical conditions or equipment failure.

As the Company continues adding Distribution Automation equipment, the amount of equipment condition and status information is growing exponentially. Current work management systems cannot interpret and process Distribution Automation data

[6] Condition-based maintenance is performance of maintenance activities based on the observed or measured "condition" of the equipment.

[7] Time-based maintenance is maintenance performed on pre-set time period, independent of the condition of the equipment.

automatically and generate work directly to field technicians. An analyst thus is required to perform the following functions:

- Monitor equipment condition and status, apply appropriate decision processes, prioritize and prepare work for issuance to field DFITS technicians;
- Escalate conditions that merit immediate attention to the DSO and supervision;
- Track completion status of condition-based maintenance;
- Prepare a variety of reports related to DA equipment condition and maintenance;
- Track "aging" of condition-based maintenance and escalate tasks that have exceeded acceptable time limits;
- Act as a liaison between internal work groups that interface regularly with DFITS;
- Perform routine work order creation and closing when necessary;
- Perform remote actions on DA equipment to clear conditions or improve equipment operation;
- Provide in-the-office support to DFITS field technicians, particularly to enhance field technician on-site productivity;
- Provide DA support to the DSO during major outages or storms; and
- Support the DFITS Field Supervisor as necessary.

Q: What are the anticipated start-up implications for implementing DFITS?

A: Start-up costs derive mainly from vehicles, field tools, and field test equipment. Nine (9) vehicles are required initially. A training and technology demonstration lab is required to provide specialized training facilities for initial and ongoing technical training. The lab will also will be used to demonstrate new or proposed equipment and technologies.

Q: Are any of these start-up costs already in rates?

A: No. These specific start-up costs are incremental.

Q: What is the anticipated incremental annual cost for DFITS?

A: To support current distribution equipment and projections through 2017, the following resources are required:

- 8 distribution field technicians;
- 1 field supervisor;
- 1 analyst;
- 9 field vehicles (other fleet pool vehicles may be needed from time to time);
- Testing equipment;
- PPE and safety equipment;
- 9 "one-mobile" laptops;

- Cell phones;
- Initial training and annual refresher training; and
- Training supplies and other miscellaneous costs.

Attached hereto, as Schedule WPH-1, is a list of the anticipated total costs of this program, which includes both annual O&M costs and capital costs for both KCP&L and GMO combined. The annual O&M costs are included in Schedule JPW-4 attached to the Direct Testimony of Mr. Weisensee (adjustment CS-49). The capital costs are included in Plant in Service on Schedule JPW-2, also attached to Mr. Weisensee's Direct Testimony.

Q: Does that conclude your testimony?

A: Yes, it does.

BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the Application of Kansas City Power & Light Company to Make Certain Changes in Its Charges for Electric Service	))))	Docket No.: 12-KCPE- -RTS

AFFIDAVIT OF WILLIAM P. HERDEGEN, III

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

William P. Herdegen, III, being first duly sworn on his oath, states:

1. My name is William P. Herdegen, III. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Vice President, Transmission and Distribution Operations.

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 fifteen (15) 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.

William P. Herdegen, III

Subscribed and sworn before me this 18th day of April, 2012.

Notary Public

My commission expires: Feb. 4, 2015

NICOLE A. WEHRY
Notary Public - Notary Seal
State of Missouri
Commissioned for Jackson County
My Commission Expires: February 04, 2015
Commission Number: 11391200

KCP&L and KCP&L GMO
2012 RATE CASE - Direct Filing

Distribution Field Intelligence and Technical Support (DFITS) Summary

Line No.	Description		No.	$ Amount	Purpose
1	**Expense:**				
2	Field Technicians & Supervisor	(9 X $45 X 2080hrs)	9	$ 842,400	Standard labor costs for Technicians, includes $104,300 for initial training labor.
3	Field Technical Analyst	($45 X 2080hrs.)	1	93,600	
4		Benefits at .61		571,100	Standard Benefit Loading.
5		Labor & Benefits		$ 1,507,100	Total labor & Benefits
6					
7	Operations Support:				
8	On-going Training		9	45,000	Initial training for new technician, and continuing training.
9	Training Support			35,000	Trainer support.
10					
11	Vehicles				
12		1 Light Duty Bucket Truck	1	28,750	Fuel & Annual Operating Costs
13		1 Cargo Van	1	8,200	Fuel & Annual Operating Costs
14		1/2 Ton 4WD Pickups	7	61,400	Fuel & Annual Operating Costs
15					
16	Other Equipment, Supplies & Lab Support			140,000	Safety, protection, testing equipment, software and cell phones.
17	Total Expense			$ 1,825,450	
18	**Capital:**				
19	Equipment Support:				
20	Lab -Simulation & Training Lab			$ 375,000	Training Lab for mock-up and in-field simulations.
21	Vehicles				
22		1 Light Duty Bucket Truck	1	110,000	Light Duty Bucket Truck
23		1 Cargo Van	1	30,000	Cargo Van
24		1/2 Ton 4WD Pickups	7	210,000	7 -4WD Pickups
25	Testing Equipment			120,000	Technical testing equipment and laptops greater than $1000.
26					
27	Total Equipment Support			$ 845,000	
28					
29	Total Distribution Field Intelligence Technical Program			$ 2,670,450	