

Lawrence B. Somers Deputy General Counsel

Mailing Address: NCRH 20 / P.O. Box 1551 Raleigh, NC 27602

> o: 919.546.6722 f: 919.546.2694

bo.somers@duke-energy.com

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### VIA ELECTRONIC FILING

M. Lynn Jarvis Chief Clerk North Carolina Utilities Commission 4325 Mail Service Center Raleigh, North Carolina 27699-4300

RE: Duke Energy Progress, LLC's Correction to 2017 Smart Grid

Technology Plan Update Docket No. E-100, Sub 147

Dear Ms. Jarvis:

On October 2, 2017 Duke Energy Carolinas, LLC and Duke Energy Progress, LLC ("DEP") jointly filed their Smart Grid Technology Plan Updates ("SGTP Update"). After filing, we discovered clerical errors in the public version of the DEP SGTP Update: several pages in Exhibits E and G incorrectly included a header stating "Redacted" even though no information on those pages had been redacted. DEP has corrected the affected pages, and I enclose the revised DEP SGTP Update for filing in connection with the referenced matter. The SGTP Update of Duke Energy Carolinas, LLC was not affected.

Thank you for your attention to this matter. If you have any questions, please let me know.

inderely,

Lawrence B. Somers

**Enclosures** 

cc: Parties of Record

# Duke Energy Progress 2017 Smart Grid Technology Plan Update



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### **Overview**

As required by the North Carolina Utilities Commission (NCUC or Commission) Rule R8-60.1(b), Duke Energy Progress (DEP or Company) submits its 2017 Smart Grid Technology Plan Update (SGTP Update). The 2017 SGTP Update represents the significant amendments or revisions to the 2016 Smart Grid Technology Plan.

# 1. Smart Grid Technology Strategy

Reference	Requirement
R8-60.1(c)(1)	A summary of the utility's strategy for evaluating and developing smart grid technologies.

### **Power/Forward Carolinas Grid Improvement Plan**

Announced in 2017, the Company outlined its plans over the next decade to modernize the North Carolina grid. Power/Forward Carolinas is comprised of strategic programs that will each play a part in building a smarter energy future for customers. These strategic programs represent the means to deliver the Road Ahead strategies of modernizing the power grid and transforming the customer experience, as outlined in the 2016 SGTP. The early years of Power/Forward Carolinas will establish the foundational and enabling infrastructure and technologies to achieve the Company's long-term objectives of a more reliable, resilient grid to better serve customers.

Certain programs included in the Power/Forward Carolinas initiative are technologies that fall under the definition of "smart grid technologies" outlined in Commission Rule R8-60.1(c), while others are not. All of the programs have similar objectives in the long term, improving reliability and resiliency of the grid; however, certain programs, like Targeted Undergrounding, are not deemed smart grid technologies. The Company has determined that the Self-Optimizing Grid, and certain portions of the Enterprise Systems Upgrades, Communications Network Upgrades and Transmission Improvements programs, meet the criteria for the SGTP and will be outlined within the Plans each year as applicable. The Enterprise Systems Upgrades primarily consists of the Distribution Management System (DMS) Consolidation projects as outlined in the 2016 SGTP. Applicable projects or initiatives are included in the 2017 SGTP Update, or will be included in future SGTPs as appropriate.

These strategic programs may be comprised of multiple gated projects and annuallyfunded work streams to accomplish the end state objectives. Each year, the Company funds and prioritizes the work efforts through the annual budgeting process, and the following governing bodies provide oversight of the portfolio: management teams, steering teams, and the financial management committee.

Cross-functional management teams aligned around the strategic programs provide program and project governance, gating and change request oversight. The management teams are also responsible for deployment performance, business readiness, issue resolution, and benefit tracking and reporting. Steering teams provide strategic oversight of all programs and projects to ensure alignment with enterprise, regulatory, financial, customer and operational strategies. Steering teams are responsible for portfolio performance, alignment with the grid improvement plan, cross-functional issue resolution (if escalated from the management teams) and to review and approve significant changes in the overall strategy. Finally, the financial management committee tracks the expenditures of the organizational budgets set forth by the Company. The committee also manages the reallocation of funding within the programs and projects to maintain budgetary compliance and determines available funding for emergent work, change requests, or any other item that has a financial impact to the organization.

The initial planning for the 10-year Grid Improvement Plan was completed in early 2017. Given this is a 10-year plan, the company will utilize a "progressive elaboration" process, pursuant to Project Management Institute best practices, to govern the plan throughout the lifecycle. In this process, the initial overall 10-year plan concepts are approved first, then a more detailed version of each year's plan is submitted and approved annually.

### Stakeholder Outreach

### Collaborative Initiatives

Through the North Carolina Public Benefits Funds, administered by Advanced Energy and Duke Energy, along with generous technical support from North Carolina's Electric Membership Cooperatives, Duke Energy and Dominion Energy North Carolina, there have been several smart grid stakeholder education initiatives.

As described in the 2016 Smart Grid Technology Plan, Advanced Energy's outreach efforts are being designed to help our state's residents make well-informed energy decisions. They want to share information about new technologies and services when they believe they can offer value, and they also want to share any concerns that may present risk. Highlights of the accomplishments over the past year include:

• Hosted a facilitated cross-sector planning meeting in November 2016 to identify priority audiences and energy related topics to focus educational and outreach efforts for 2017.

The key audiences identified by the stakeholders were: state legislators, utilities commissioners, county commissioners, municipal staff, public staff and large business customers.

- Identified a webinar series as the most efficient and flexible delivery method for the outreach and education body of work for the priority NC stakeholder audiences identified.
- The overarching goal of the webinar series was to build awareness among the targeted key decision makers on relevant smart grid topics and their effects on technology, economic development, and policy across North Carolina.

### 2017 NC Smart Grid Webinar Series

- 1. Smart Grid Basics (presented April 26, 2017)
- 2. Solar Power and Grid Integration (presented May 24, 2017)
- 3. Smart Meters and Advanced Metering Infrastructure (presented June 22, 2017)
- 4. Microgrids and Grid Resiliency (presented September 20, 2017)
- 5. Self-Optimizing Grid (scheduled October 24, 2017)
- Created a publicly accessible website, <u>www.NCSmartGrid.org</u>, hosted and maintained by Advanced Energy. This site contains a repository of smart grid resources, presentation collateral and video links that can be used by stakeholders state-wide. Recordings of the NC Smart Grid Webinar Series are available through the NC Smart Grid website as an ongoing resource for stakeholders.
- Future engagement activities include plans to convene a facilitated stakeholder session in November 2017, similar to that which took place in November 2016, to gather scoping input for 2018 education and outreach work.

# 2. Improving Reliability and Security of the Grid

Reference	Requirement
R8-60.1(c)(2)	A description of how the proposed smart grid technology plan will improve reliability and security of the grid.

The description for each new technology project listed under Sections 3 through 5 and the specific benefits described, outline the impacts each project will have on the reliability and security of the grid. Additionally, the grid improvement plan as a whole will provide synergies resulting in greater overall value in improving grid security, reliability and resiliency, while also creating greater efficiencies and improving safety and sustainability.

One of the primary objectives of the Power/Forward Carolinas grid improvement plan is to reduce outages. When outages do occur, the goal is to reduce the time customers are without power. There are additional objectives that will address the physical and cyber security of the grid through specific programs, and also as an ancillary result of other programs. While some of these programs may not fall into the definition of smart grid technologies, all are designed to play a vital role in modernizing the grid.

### 3. Current and Scheduled Technology Deployments

Reference	Requirement
R8-60.1(c)(3)	For all smart grid technologies currently being deployed or scheduled for implementation
	within the next five years: $(i) - (vii)$

### **DEP AMI Deployment**

(i) A description of the technologies, including the goals and objectives of each technology, options for ensuring interoperability of the technology with the legacy system, and the expected life of the technology.

AMI is the foundational investment that will enable enhanced customer solutions - giving customers greater control, convenience and choice over their energy usage, while also giving customers the opportunity to budget, save time and save money. AMI technology allows a utility to gather more granular usage data and utilize new capabilities to offer new programs and services to customers that are not achievable through existing meters. The AMI technology will pave the way for programs that will allow customers to stay better informed during outages, control their payment due dates, avoid deposits, to be reconnected faster, and to better understand and take control of their energy usage, and ultimately, their bills. Over time, the Company also expects AMI meters to contribute to cost reductions from reduced truck rolls in the years after deployments.

Deployment of AMI meters allows customers to start, stop and move service without the need for a technician visit. The AMI meters also provide an interface for customers to see and understand their hourly energy usage, allowing them to better manage their consumption and, as a result, their bills. AMI meters will enable future customer programs such as outage notification alerts, mid-billing cycle usage alerts, a real-time usage application for smart phones, and the ability for customers to select their payment due date. The technology can also enable future energy efficiency options and potential time-of-use rate offerings as well as pre-payment programs. Current meters cannot provide these capabilities.

The proposed AMI meters are directly interoperable with the existing enterprise AMI meter systems and have a planned life of approximately 15 years.

(ii) The status and timeframe for completion.

The Board of Directors has endorsed the DEP AMI deployment project; however, the outcome of regulatory considerations in the DEP rate case could affect the Company's timing to advance the project.

(iii) A description of any existing equipment to be rendered obsolete by the new technology, its anticipated book value at time of retirement, alternative uses of the existing equipment, and the expected salvage value of the existing equipment.

The existing DEP meters that are in scope to be replaced by the AMI deployment, along with the associated communications equipment, had a net book value of approximately \$89.6 M as of December 31, 2016, which is expected to be approximately \$77.2 M on December 31, 2017.

(iv) A description of how the utility intends the technology to transfer information between it and the customer while maintaining the security of that information.

AMI meters capture energy usage and send it to grid routers directly, through range extenders, or through other meters to form a radio frequency (RF) mesh network. The grid routers transmit collected usage data to the AMI headend system via cellular backhaul once each day. The head-end system acts as the data collection point inbound from the metering infrastructure, as well as providing meter command and encryption key management outbound. The data is then sent to a Meter Data Management (MDM) system which provides billing determinants to the customer billing system for billing.

The data collected by the AMI meter utilizes a unique meter number (not displayed on the meter face) and thereby contains no personally identifiable customer information. All data is encrypted at the meter and decrypted at head-end system. The meter number is then used as the linkage to other information within the customer billing systems.

See additional information covered in Section 7(iv) and Appendix B related to how the utility provides usage information to customers through the secure online customer portal and billing statements.

(v) A description of how third parties will implement or utilize any portion of the technology, including transfers of customer-specific information from the utility to third parties, and how customers will authorize that information for release by the utility to third parties.

This section is not applicable as this project does not currently involve the transfer of customer information to any third-parties. Refer to Appendix B for general information on providing data to customers and third parties.

(vi) Approximate timing and amount of capital expenditures, including those already incurred.

DEP has incurred approximately \$196,000 of actual capital expenditures on the AMI project through July 2017 for planning efforts. Based on the most recent cost estimate for the project, the forecast capital costs are outlined below:

<b>DEP AMI Capital Forecast</b>	2017	2018	2019	2020	2021
Annual Capital \$ (millions)	\$4.6	\$72.5	\$98.4	\$93.6	\$8.9

(vii) Analyses relied upon by the utility for installations, including an explanation of the methodology and inputs used to perform the analyses.

The analysis attached in Appendix C was presented to Company Management and Board for consideration of the project. This analysis represents total capital and operating expense deployment costs and operational benefits over a 20-year period, for the entire Duke Energy Progress service territory (North and South Carolina).

Additionally, part of the Company's strategy moving forward has been aligned with providing customers with more choice, convenience and control. Therefore, the ability to offer the enhanced customer services and programs as detailed in section R8-60.1(c)(3)(i) above, along with improvements in customer satisfaction, are some of the non-quantifiable benefits further supporting the Company's decision to move forward with a full AMI deployment.

For the analysis and supporting files, see Appendix C. **Exhibit A DEP AMI Deployment Analysis** outlines the project and analysis. For a summary of the costs see **Exhibit B CONFIDENTIAL DEP AMI Cost Estimate Summary**. For a summary of the benefits see **Exhibit C DEP AMI Benefits Summary**.

For the additional cost details, see Exhibit D DEP AMI Cost Description Detail and Exhibit E CONFIDENTIAL DEP AMR to AMI Deployment Class 2 Final. For additional benefit details, see Exhibit F DEP AMI Benefit Details and Exhibit G CONFIDENTIAL DEP AMI Benefits Calculations and Assumptions Final.

### **Self-Optimizing Grid**

(i) A description of the technologies, including the goals and objectives of each technology, options for ensuring interoperability of the technology with the legacy system, and the expected life of the technology.

The Self-Optimizing Grid (SOG) Program implements additional design criteria on distribution circuits that improves reliability and enhances system resiliency. This resiliency will enable the system to reduce outage duration from fault events. Key components of the projects will involve adding capacity to distribution circuits and substation transformers and connecting radial distribution circuits together with automated switches. The head-end enterprise systems such as the Self-Healing software and the Distribution Management System (DMS) software are essential to enabling this capability.

The Self-Optimizing Grid is an advancement from Self-Healing "Networks". The Self-Healing Networks and Feeder Segmentation projects were a foundational step in the progression towards the SOG program. Instead of having individual circuit pairs that can back each other up, the integrated grid network allows for multiple circuit rerouting options to re-energize segments and minimize customer outage events. The SOG program will further segment the circuits to minimize the number of customers affected by sustained outages and ensures the necessary capacity and connectivity to fully leverage the segmentation.

Under this program, circuits will have automated switches deployed according to the SOG guidelines, which outline automated switches approximately every 400 customers, or 3 miles in circuit segment length, or 2 MW peak load. The goal of the SOG program is to have 80% of customers served from circuits that have alternate power re-routing options and sufficient capacity to re-route power without being overloaded the majority of the time. Circuits that meet these additional guidelines will have SOG capabilities.

The SOG will automatically reroute power around a problem area, like an outage caused by a tree falling across a line, animal interference, or fault events. With this automation, the grid can self-identify problems and isolate affected areas by reconfiguring the circuits, which can shorten or even eliminate outages for many customers.

Automated switch equipment typically has an approximate 20-year expected life, and control and communications equipment, an approximate 5- to 7-year expected life.

### (ii) The status and timeframe for completion.

The initial engineering, scoping and planning for the SOG program began in 2017 with expectations to begin field work in 2018. The initial planning will address activities in 2018 and the planning for following years will occur as part of the annual planning process. 2018 is the first year of the expected 10-year program to achieve the anticipated goal of 80% of customers being served by the SOG.

(iii) A description of any existing equipment to be rendered obsolete by the new technology, its anticipated book value at time of retirement, alternative uses of the existing equipment, and the expected salvage value of the existing equipment.

During field work, installations will primarily consist of new equipment to achieve the new SOG guidelines. However, there will be instances where aged, automated switches, or other non-automated equipment will need to be replaced.

(iv) A description of how the utility intends the technology to transfer information between it and the customer while maintaining the security of that information.

This section is not applicable as this technology does not transfer information to/from customers.

(v) A description of how third parties will implement or utilize any portion of the technology, including transfers of customer-specific information from the utility to third parties, and how customers will authorize that information for release by the utility to third parties.

This section is not applicable as this technology does not transfer information to/from customers and will not be utilized by third-parties.

(vi) Approximate timing and amount of capital expenditures, including those already incurred.

Estimated costs through end of year 2017 are forecast to be approximately \$0.42 M for planning, scope identification and engineering. Forecast capital expenditures for the next five years are as follows:

<b>DEP</b> (Millions)	2018	2019	2020	2021	2022
Self-Optimizing Grid	\$16.0	\$80.7	\$79.3	\$83.5	\$81.5

(vii) Analyses relied upon by the utility for installations, including an explanation of the methodology and inputs used to perform the analyses.

Self-Optimizing Grid analysis uses the design criteria of segmenting the circuits for approximately 400 customers, 3 miles of circuit, or 2MW of load. Benefits can include:

- Reduces system-wide customers interrupted (CI) and customer minutes of interruption (CMI)
- Creates a networked energy system that improves operational situational awareness
- Minimizes the number of customers impacted by an outage
- Isolates problem areas for quicker mobilization and repair
- Shortens outage duration for impacted customers
- Automates system reconfigurations reducing the need for manual switching
- Improves grid resiliency and ability to recover from major events
- Enables the grid to effectively manage private distributed energy resources

# 4. Technologies Actively Under Consideration

Reference	Requirement
R8-60.1 (c) 4	For all smart grid technologies actively under consideration for implementation within the next
	five years, the smart grid technology plan shall include a description of the technologies,
	including the goals and objectives of the technologies, as well as a descriptive summary of any
	completed analysis used by the utility in assessing the smart grid technology.

### **Capacitor Bank Controls Upgrade**

Duke Energy Progress has been utilizing the current capacitor bank controls for 15+ years and has nearly 3,000 units in-service today. These devices have been integral in managing the system's reactive power flow during that time. This capability allows the Company to reduce system losses and improve the real power flow capacity on its distribution and transmission system. The implementation of the Distribution System Demand Response (DSDR) program further enhanced the VAR management capabilities of the capacitor bank controls to allow for two-way communications, increased troubleshooting capabilities and automated control of the voltage and reactive power of the distribution system.

Due to the age of the devices, and a recent decision to upgrade the Distribution Management System (DMS) and Distribution Supervisory Control and Data Acquisition (DSCADA) systems, the current capacitor bank controls can no longer provide the needed support due to dated communications and security protocols of the product. Technology enhancements have deemed these products obsolete and incapable for integration into newly designed control systems.

The objective of this program is to systematically replace the obsolete capacitor bank controls with a new version of the equipment and to successfully reintegrate them into the new DMS allowing for continued capabilities of the DSDR program, as well as upgrade the hardware to meet security requirements for smart grid devices.

### Benefits of this uplift effort include:

- Integrated process for implementing EM1, EM2 and DSDR capabilities
- Fully integrated security features which include door alarms allowing for increased security from physical intrusion of unauthorized parties
- Integrated Volt/VAR support allowing Company to maintain voltage support
- Reduced programming support needed to integrate two products into new DMS
- Reduced maintenance efforts needed for aged fleet of controls
- Fully enabled remote access allowing for easy updates of firmware and software enhancements

### **Enterprise Transmission Health & Risk Management Project**

Duke Energy's Transmission Operations manages over 32,200 miles of transmission lines, nearly 10,000 transformers, and nearly 15,000 circuit breakers. As the result of modernization and record keeping over many years, the Company has access to a significant amount of data, and has begun accelerated strategies to employ data analytics to assess the health and risk of failure of the equipment. This method will optimize the utilization of these assets in order to better monitor the operational and financial health of the equipment fleet. However, in the current environment the evaluation of the fleet cannot be performed in a comprehensive manner. The Transmission Asset Management organization is using antiquated tools and manual methods to understand equipment health and to predict and react to equipment failures.

Transmission Health and Risk Management (HRM) is a philosophy for how to manage assets. This philosophy is supported by software, monitoring, data, analytics, data science and people. This project will implement a new enterprise HRM platform to collect and analyze data to prescribe how Transmission can improve the management of its assets. The Company's strategy identifies condition monitoring as a key strategic program and this work aligns with the Road Ahead strategy of modernizing the power grid.

The selected HRM solution is an advanced analytics software package that helps utilities use a systematic, data-driven approach to assess the on-going health of assets, and take specific actions to improve overall system reliability. This enterprise project is estimated at approximately \$40 million and expected to be implemented over a four-year period, beginning by the end of 2017.

The HRM solution enables personnel to better manage Transmission transformer and breaker health, and capture significant value by:

- Reducing operating expenses by prioritizing replacement and maintenance actions
- Improving capital expense efficiency by prioritizing replacement and maintenance actions
- Improving customer value though improved reliability
- Reducing the likelihood of catastrophic transformer failures

### **HRM Project Objectives**

- Implement a new HRM platform
- Develop new HRM processes
- Become proactive versus reactive by shifting from an alarming model to a predictive model that incorporates the component, asset, fleet, and system health & risk data
- Extend the lifecycle of aging assets
- Reduce asset failures or catastrophic failures

### Western Carolinas Energy Storage Analysis and Deployment Plan

As stated in DEP's Western Carolinas Modernization Project (WCMP) Annual Progress Report (Docket No. E-2, Sub 1089), DEP has identified multiple opportunities to deploy energy storage in the form of batteries throughout the region, specifically to meet the Commission's order to deploy at least 5 MW of energy storage in the DEP-West region and support the avoidance or deferral of the contingent natural gas-fired Combustion Turbine. Two initial projects, which combine for over 5 MW of capacity, have been submitted to the DEP interconnection queue and are intended to provide essential reliability services, such as frequency, voltage, and ramping support, to the electric grid and capacity during system peaks as well as disconnecting ("islanding") from the grid to mitigate outages for DEP customers connected to certain feeders.

DEP continues to perform due diligence in order to de-risk and develop the initial projects, including environmental assessments, permitting, and technology selection and plans to connect each facility directly to the grid (in front of the meter) at the appropriate distribution voltage and interconnection points. The deployment of these projects will be the first of its kind in North Carolina where a major utility will own batteries to store and dispatch levels of energy significant enough to be used to adequately and reliably serve the electric system and the Company's customers.

These projects represent an opportunity for DEP to procure, install and monitor distributed energy technologies that will allow DEP to provide a smart, safe, cost-effective and reliable solution for serving customers in lieu of performing costly upgrades to and ongoing maintenance of conventional distribution facilities, such as new feeders and substation equipment, in extremely remote and land-constrained regions in Western North Carolina. Additional details regarding the two initial projects and the multi-year storage deployment plan will be provided in the next WCMP Annual Progress Report due in March of 2018.

### **Enterprise Communications Network Upgrades Program**

### Strategic Fiber and Wireless Transport

The backbone of Duke Energy's communications network (a.k.a. the 3rd Grid) is the transport network, which consists of fiber optical cable and microwave systems. A recent current state assessment identified 1,750 miles of fiber optic cable that needs to be evaluated for replacement (based on age) and several key fiber rings that are underperforming. Additionally, to satisfy business needs identified during the Enterprise Communications Strategy effort, Duke

Energy will expand its fiber network to connect key generating plants, operations centers, substations and other critical facilities. Microwave systems are also used to provide high capacity connectivity. Many of Duke Energy's microwave systems in place today use network technology that is becoming obsolete, and the capacity of many microwave paths is not meeting business needs.

The Strategic Fiber and Wireless Transport work stream will begin replacing end-of-life fiber optic cable and microwave systems, add fiber to new, targeted routes based on business needs, and investigate alternatives to optical ground wire to enable Duke Energy to deploy fiber faster and less costly. The Enterprise Communications strategy concluded that to move to a smarter grid, the Company needed to:

- Treat communications as the 3rd Grid (e.g., an enterprise asset) and elevate communications to the same status as the electric grid and the gas grid
- Implement Broadband Internet Protocol from the core to the edge of the grid
- Make communications grid improvements that ensure: resiliency, reliability, security, capacity, and low latency. Fiber is one of the primary ways to enhance the entire communications grid.
- Expand network infrastructure, uplifting end-of-life technology and implementing a holistic network design

### Grid Wide Area Network (WAN)

The Grid WAN initiative includes efforts to replace end-of-life data network hardware on the network core and in substations, and to convert substation hardware to Internet Protocol (IP). This work stream also includes redesigning existing networks for more capacity and better resiliency, and developing strategies for the Field Area Network (FAN) and Neighborhood Area Network (NAN).

A FAN strategy is being developed to support changes to grid communications due to the emergence of solar and battery storage, microgrids and distributed intelligence. A NAN strategy will also help to optimize the value of the AMI infrastructure by enabling other use cases such as lighting controls and demand response to benefit from its two-way mesh communications, in addition to scaling it for enterprise-wide AMI.

### Next Generation Cellular

Duke Energy primarily uses a cellular vendor for cellular connections to substations, distribution line devices, AMI backhaul devices, direct-connect meters and load management

switches. A significant number of these modems use 2G/3G technology which will be decommissioned by the cellular vendor by the end of 2022. Therefore, the Company will need to replace its 2G/3G cellular modems by the end of 2022. Some of these modems may be replaced by other efforts, such as the enterprise roll-out of AMI and the replacement of end-of-life substation routers; however, any remaining modems will be replaced as part of this work stream.

# 5. Technology Pilots and Initiatives

Reference	Requirement
R8-60.1 (c) 5	For each pilot project or initiative currently underway or planned within the next two years to
	evaluate smart grid technologies: $(i) - (v)$

At this time, the Company does not have any new pilot projects or initiatives to evaluate smart grid technologies.

# 6. Projects No Longer Being Considered

Reference	Requirement
R8-60.1 (c) 6	A description of each project or initiative described in a previous plan that is no longer under
	consideration by the utility, and the basis for the decision to end consideration of each project
	or initiative.

At this time, the Company does not have any projects or initiatives that are no longer under consideration.

# 7. Advanced Metering Infrastructure (AMI) Summary

Reference	Requirement
R8-60.1 (c) 7	For automated metering infrastructure (AMI), in addition to the information required in
	subsections (3) or (4) of this section, as appropriate, the utility shall also provide: $(i) - (iv)$

(i) A table indicating the extent to which AMI meters have been installed in the utility's service territory and specifically in North Carolina, the North Carolina jurisdictional customer classes and/or tariffs of customers with AMI, and the predicted lifespans of these installations. This table should indicate the number of AMI meters that has been installed both cumulatively and since the filing of the last smart grid technology plan.

(ii) The number of meters in North Carolina that use traditional metering technology and/or automated meter reading (AMR) technology, and the predicted lifespans for these installations.

Meters installed in DEP North Carolina as of August 2017

			Walk-By &
<b>Customer Class</b>	<b>AMI Meters</b>	<b>AMR Meters</b>	Other Meters
NC Residential	20,422	1,158,462	5,909
NC Commercial	35,099	155,079	18,293
NC Industrial	1,296	651	2,658
NC Company	2	437	0
Use & Other			
Totals	56,819	1,314,629	26,860

DEP has installed approximately 182 AMI meters since the information provided in the 2016 Smart Grid Technology Plan. The predicted lifespan of the AMI meters is approximately 15 years, and all other meters currently installed have a predicted lifespan of 15-20 year.

(iii) Any adjustment made by the utility to its capital accounting due to AMI, including the dollar amount of write-downs of its meter inventories.

As of the time of this filing, the Company has not made any capital accounting adjustments due to AMI. DEP is awaiting Commission approval in Docket No. E-2, Sub 1142 for the Company's request to include the amount for retired meters in a regulatory asset.

(iv) A discussion of what AMI services or functions are currently being utilized, as well as any plans for implementing other AMI services or functions within the next two years.

At this time, the primary AMI functionality being utilized is the remote meter reading capability.

Once the proposed AMI deployment project is complete, along with the remote meter reading, the AMI meters will also provide enhanced detection of meter tampering. DEP plans to utilize the remote order fulfillment capabilities of the meters, allowing for remote off-cycle reads

or re-reads, remote reconnections and disconnections, and read-in/read-out orders to stop or start service.

Additionally, DEP also plans to provide the ability to access day prior electric usage information via the internet-based Customer Portal. The Portal will display usage information up to and including prior day usage. Customers will be able to view daily and average energy usage by billing cycle or month. Customers will also be able to view average energy usage by day-of-week, and hourly energy usage by day or week. Time-of-Use and Demand customers are able to view the information above, and can also see the date and hour when the peak usage or peak demand occurred, for the current or selected billing cycle. Customers will have the ability to download their hourly usage data from the Customer Portal in a .CSV format.

# **Appendix A – Proposed Changes to Data Access Rules**

Pursuant to the North Carolina Utilities Commission's March 29, 2017 *Order Accepting Smart Grid Technology Plans* (March 29, 2017 SGTP Order) in Docket No. E-100, Sub 147, requesting that the electric utilities, the Public Staff, and all interested parties continue discussing potential rule changes related to customer data access, and that Duke include a report on those discussions in its 2017 SGTPs, DEC and DEP provide the following report:

Since the issuance of the Commission's March 29, 2017 SGTP Order, DEC and DEP have not had any formal discussions with NCSEA and the Public Staff regarding potential rule changes to address data access issues. During 2017, DEC and DEP had some discussions related to data access issues with NCSEA and the Public Staff in the context of a legislative stakeholder process, but no such legislation was ultimately enacted. The Companies remain willing to have further discussions should the Commission decide to engage in such rulemaking.

# Appendix B – Responses to Questions in Commission's August 23, 2013 Order in Docket No. E-100, Sub 137

Pursuant to the North Carolina Utilities Commission's March 29, 2017 *Order Accepting Smart Grid Technology Plans* in Docket No. E-100, Sub 147, that DEC and DEP "update their responses to the questions posed in the Commission's August 23, 2013 Order and include those responses in future SGTP filings," Duke Energy Progress provides the following response:

The Company has had no significant revisions to the responses provided in the 2016 Smart Grid Technology Plan, Appendix B.

# **Appendix C – DEP AMI Analysis Files**

# **DEP AMI Deployment Analysis**

### **Executive Summary**

The DEP AMI Deployment project is an effort to fully deploy Advanced Metering Infrastructure (AMI) across the Duke Energy Progress service territory. The deployment, planned to begin in Q1 2018, will include field installations of metering and communication equipment, as well as field and back office efforts to optimize the AMI network. By leveraging deployment experience and pre-established vendor relationships from AMI deployments in other Duke Energy jurisdictions, this project is expected to complete the meter replacements in less than three years. The deployment will utilize the Enterprise solution for AMI—Itron OpenWay. Over 1.5 million Itron OpenWay AMI meters have been installed to date, with full deployments underway in Duke Energy Carolinas and Duke Energy Indiana.

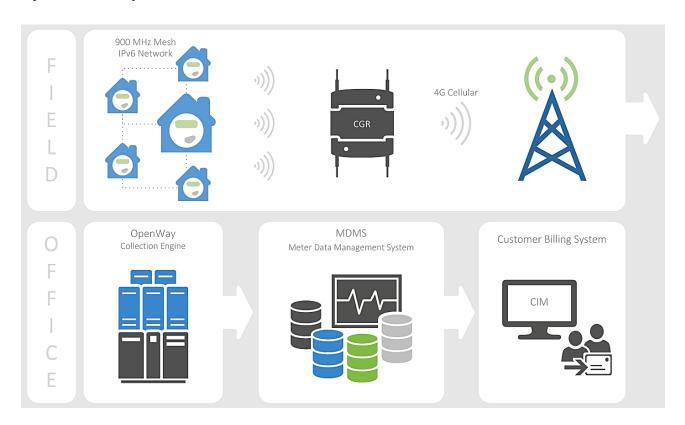
The DEP AMI Deployment will enable the company to leverage AMI for significant customer and operational benefits. The complete AMI architecture is foundational to providing the Enhanced Customer Solutions (ECS) designed to offer increased control, convenience, choice, and transparency. These Enhanced Customer Solutions, which include offerings such as remote connect/disconnect, usage alerts, customer usage mobile application, outage and voltage alerts, Prepaid Advantage, and choose your own due date, are key to improving customer satisfaction (See Appendix 1). Operational benefits include significantly reducing field trips for meter reading, reconnecting power, and disconnecting power. In addition, advanced metering provides frequent and robust data enabling the company to more accurately detect revenue loss, bolster grid telemetry, monitor voltage quality, and improve outage management.

The net book value of the metering assets to be replaced in DEP as part of this project was approximately \$89.6MM as of December 2016, and is expected to be approximately \$77.2MM at year-end 2017.

### **Project Description**

Business Unit	Grid Solutions / Dis	Grid Solutions / Distribution Operations / Customer Solutions			
Executive Sponsors	Lee Mazzocchi / Lloyd Yates / Sasha Weintraub / David Fountain				
Project Location	Duke Energy Progr	Duke Energy Progress			
Investment Date	February 28, 2017 (Project Start) March 15, 2018 (Deployment Start)				
In-Service Date	December 31, 2020 (Deployment Complete) June 30, 2021 (Project Complete) Meters will be placed in-service as installed				
Project Capital Costs (\$M)	Estimate: \$280MM Variance from Plan:				
Program Cost Estimate Class	Class 3				
Program Profile Risk Matrix	Green III				

### **System Description**



### Strategic Rationale

Advanced metering has proven its value to both customers and the business in strategic predecessor projects throughout the Enterprise. Installation of AMI in the DEP service territory will enable the most cost-effective operational processes for metering and is a foundational step to provide a suite of services that have become standard in business and the electric utility industry. As Duke Energy customers increasingly demand these services and the pressures on the Company to reduce operational costs grow stronger, it is critical to accelerate the deployment of AMI.

### **Background**

There are currently 1.565 million meters in the Duke Energy Progress service territory, the majority of which are read monthly by the mobile meter reading system. In addition, a small number (65K) of Silver Springs Network (SSN) AMI meters were installed from 2012-2013, replacing walk-by meters as part of a DOE grant. SSN is a hosted AMI solution, which does not support enhanced customer offerings and results in high on-going maintenance fees.

This project will replace both the mobile and SSN metering solutions in DEP with Itron OpenWay AMII Duke EnergyIs Enterprise AMI solution. Itron offers a cost-effective technology that will provide significant reductions in operating cost and increased functionality. This technology also fully aligns with and enables the full suite of Enhanced Customer Solutions. With the Itron AMI solution, customers will benefit

from the ability to participate in all future offerings, such as timely outage notifications and increased transparency into their energy usage.

### Scope

This effort will fully deploy Itron OpenWay AMI technology across the Duke Energy Progress service territory. The project has been broken down into the following areas:

### Advanced Metering Infrastructure Pre-Scale Deployment

- Perform vendor and technology pilot to ensure end-to-end system functions properly and there is no impact to customer billing by deploying 100 meters and required communication infrastructure
  - o Q4 2017 Q1 2018

### Advanced Metering Infrastructure Deployment

- Deploy ~1.56M Itron OpenWay AMI electric meters
  - o Q1 2018 Q4 2020
- Install and optimize the Itron AMI network, leveraging Cisco IPv6 technology
  - o Q1 2018 Q2 2021

### Contractor/Vendor/Technology Selection

### Meter Installation Contractors:

Duke Energy currently has Master Service Agreements with four meter installation vendors, of which three are currently installing AMI in Duke Energy jurisdictions. For the DEP AMI Deployment, Duke Energy will include these four vendors in the bid process and consider additional vendors due to the amount of work across all AMI vendors during the deployment period. The DEP AMI Deployment will likely leverage three vendors to complete the deployment. Utilizing multiple vendors will minimize the risk of non-performance from a single vendor and shift volume in a way that improves productivity and efficiency. In addition, the multiple installation vendor approach will help reduce risk of a single vendor not meeting the scheduled deployment timeline.

The three vendors currently installing at Duke Energy as part of the DEC and DEI AMI deployments have proven track records. Prior to selection, these vendors were thoroughly vetted, including verifying references, financial screenings, and a completed scoring matrix (Commercial & Technical).

### Meter Manufacturer:

Itron will be the technology vendor of the OpenWay AMI solution. Itron was selected as part of a rigorous RFQ process completed in 2014. During this process, a number of prequalified industry leaders in AMI were solicited, four of which responded. The vendors were subsequently scored by multifunctional teams in both commercial and technical areas. Each team used a standardized approach to weigh key attributes within its focus areas, ensuring each vendor was fairly ranked. At the completion of this exercise, the Itron OpenWay solution was identified as the leader and was awarded the RFQ. This technology is being leveraged moving forward with all future AMI deployments. Also, Itron will manufacture the meters and communication devices within the United States, primarily at the plant located in Oconee, South Carolina.

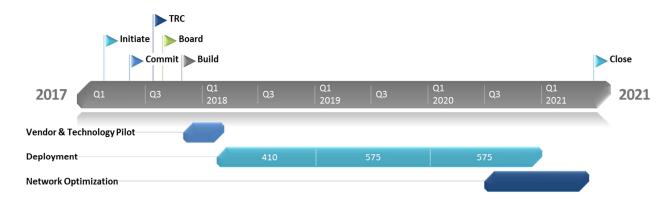
Itron has proven the OpenWay AMI solution at several large utilities, including over 20 major AMI deployments and more than 20 million endpoints deployed. There are currently over 1.5 million total

OpenWay endpoints installed in the Duke Energy Carolinas, Duke Energy Indiana, Duke Energy Ohio, and Duke Energy Kentucky service territories. These deployments leverage several different communication offerings available within the OpenWay platform. The DEP AMI Deployment will take a hybrid approach that will utilize both the Cisco IPv6 mesh and 4G cellular provider networks. Specifically, the project will install the Itron IPv6 electric mesh meter for most applications. In addition to the mesh meter, the 4G LTE cellular meter will be installed in remote, rural, and hard-to-reach locations where the 4G solution is more cost-effective than building out a Cisco IPv6 mesh network. Using this hybrid approach to communications, which has been well-demonstrated in other Duke Energy jurisdictions, will enable more customers to receive the full benefits of AMI.

### Meter Data Management System (MDMS):

The Enterprise solution for AMI meter data management is the Oracle Meter Data Management System (MDMS). This system provides functionality to collect and validate the accuracy of interval AMI data prior to billing. In addition, the MDMS calculates bill determinants, allowing the billing system to generate customer bills. There are currently over 1.5 million Itron AMI meters being billed through this system. The DEP AMI Deployment project will continue to leverage MDMS to support data collection, billing, and the Enhanced Customer Solutions enabled by AMI technology.

### **Schedule & Milestones**



### Contractual Structure, Compliance & Legal Discussion

### Itron (Meter Manufacturer):

This project will leverage the existing Itron Master Agreement executed in 2012, which includes software, hardware, services, and maintenance. The Master Agreement was amended to reduce overall cost based on the AMI meter volumes approved by the Company in 2016. This will result in significant discounts that apply to all future AMI meter purchases. In addition, the Master Agreement has several unique clauses that provide protection to Duke Energy based on the complexity of the technology. This Master Agreement is being leveraged for all on-going Itron AMI deployments. The term of the contract will run through April 2022.

### Installation Vendors:

Master Service Agreements have been established with four potential installation vendors. Each of the Master Agreements contains language specific to safety requirements, security, termination for convenience, and an attachment for a third party service provider agreement. The Agreements have

been structured such that the vendor will be paid only for installed units; the vendor will not be paid for units that are returned to the utility.

Once the project has received approval, the vendors will be solicited to provide a quote for completing the installation for the DEP AMI Deployment. Taking into consideration the Enterprise-wide installation strategy, along with commercial and technical terms, the project will be awarded to the best evaluated vendors.

### Communication Device Installations:

The communication equipment will be installed by a combination of Duke Energy staff (as resources are available) and existing Delivery Operations-approved contractors (with existing Master Service Agreements).

### **Alternative Analysis**

During the Regulated Utility Strategy Development (RUSD) work, a detailed analysis of alternatives capable of providing a basic level of defined customer offerings was conducted. It was determined that the AMI system is the only commercially-available technology capable of providing and supporting these offerings/services. Provision of these services is viewed as critical to the objective of expanding customer offerings that will lead to greater customer satisfaction.

In addition, the analysis evaluated the technology landscape for utility metering. This included hosting multiple roadmap sessions with the technology offices of key meter manufacturing companies and consulting with an EPRI representative. Based on these sessions and additional industry research, it was determined that a potential leap in technology would most likely not occur before 2030, at least not in a commercially viable product ready for utility installation at over 1.5 million delivery points. Therefore, the recommendation was to accelerate the deployment rate of the Itron OpenWay AMI platform, allowing the benefits of AMI to be realized for both customers and the Company, while allowing adequate time to fully recover the AMI system assets. It was concluded that the only present alternative to AMI would be to postpone the deployment until the next generation of technology is available.

### **Project Costs & Contingency**

The DEP AMI Deployment project team has leveraged significant experience from predecessor AMI deployments in developing the cost estimate. Below is a summary of major cost components.

Materials <sup>1</sup>	\$198,056,885
Project Labor <sup>2</sup>	\$22,687,505
Equipment Installation <sup>2</sup>	\$37,992,150
Labor Escalation	\$1,766,413
Overhead Allocation <sup>3</sup>	\$2,471,519
Estimate Contingency <sup>4</sup>	\$11,517,479
Risk Contingency⁴	\$3,670,524
AFUDC <sup>5</sup>	\$0
Total	\$278,162,475

Material costs were calculated using the contractual pricing that has already been established with the vendor.

<sup>&</sup>lt;sup>2</sup> Project labor and installation costs are based on experience from past and on-going AMI deployments projects.

<sup>&</sup>lt;sup>3</sup> Overhead allocations are based on forecasted staffing needs and the total cost of expected projects that these charges would be distributed amongst.

### **Total Costs & Benefits**

		Actuals		Year 1	Year 2			Year 3	Year 4			Year 5		Years 6-20		Total					
Total Cost (\$ in Millions)	2016 2017		2018		2018		2018		2019 2020 2		2020		2021		2021		2021				
Capital Project Costs	\$	0.05	\$	4.72	\$	72.47	\$	98.39	\$	93.64	\$	8.87	\$	-	\$	278.14					
Capital Recurring Costs	\$	-	\$	-	\$	0.21	\$	0.51	\$	0.80	\$	0.86	\$	35.16	\$	37.54					
O&M Program Costs	\$	-	\$	-	\$	0.02	\$	-	\$	-	\$	-	\$	-	\$	0.02					
O&M Recurring costs	\$	-	\$	-	\$	0.85	\$	1.83	\$	2.62	\$	2.98	\$	50.66	\$	58.94					
Total Capital	\$	0.05	\$	4.72	\$	72.68	\$	98.90	\$	94.44	\$	9.73	\$	35.16	\$	315.68					
Total O&M		-	\$	-	\$	0.87	\$	1.83	\$	2.62	\$	2.98	\$	50.66	\$	58.96					
Total Annual Costs		0.05	Ф	4 72	¢	72.55	¢	100.72	¢	97.06	¢	19 71	¢	95 92	¢	274 64					

			Year 1	Year 2	Year 3	Year 4	Year 5	١	Years 6-20	Total
Total Benefits (\$ in Mi	illions)		2017	2018	2019	2020	2021			
Expense Reduction	Meter Reading Cost Reduction	\$	-	\$ -	\$ 0.40	\$ 0.85	\$ 3.12	\$	47.63	\$ 52.00
	Field Metering (Temp to Capital)	\$	-	\$ 0.98	\$ 1.40	\$ 1.40	\$ -	\$	-	\$ 3.78
	Reduced Meter Operations Costs	\$	-	\$ 0.03	\$ 0.10	\$ 0.10	\$ -	\$	-	\$ 0.23
	Consumer Order Cost Reduction	\$	-	\$ 0.13	\$ 1.52	\$ 2.91	\$ 3.70	\$	57.13	\$ 65.39
	Consumer Order Cost Reduction (DNP)	\$	-	\$ -	\$ -	\$ 0.73	\$ 0.94	\$	14.44	\$ 16.11
	Cellular Cost Reduction (SSN APs)	\$	-	\$ -	\$ 0.01	\$ 0.06	\$ 0.12	\$	1.80	\$ 1.99
<u> </u>	Restoration Cost Reduction - OK on Arrival	\$	-	\$ 0.05	\$ 0.22	\$ 0.43	\$ 0.55	\$	8.45	\$ 9.70
	Restoration Cost Reduction - Major Storms	\$	-	\$ 0.06	\$ 0.29	\$ 0.81	\$ 0.98	\$	14.97	\$ 17.11
	Miscellaneous O&M Savings	\$	-	\$ 0.04	\$ 0.37	\$ 0.87	\$ 1.06	\$	16.15	\$ 18.49
Avoided Costs - Capital	Miscellaneous Capital Savings	\$	-	\$ 0.01	\$ 0.12	\$ 0.29	\$ 0.35	\$	5.38	\$ 6.15
	Reduced Legacy Meter Failures	\$	-	\$ 0.01	\$ 0.06	\$ 0.11	\$ 0.14	\$	2.12	\$ 2.44
Increased Revenue	Non-Technical Line Loss Reduction	\$	-	\$ 1.68	\$ 7.26	\$ 13.57	\$ 16.88	\$	219.30	\$ 258.69
	Total O&M Expense Reductions	\$	-	\$ 1.13	\$ 3.43	\$ 6.05	\$ 7.88	\$	120.99	\$ 139.48
	Total Avoided O&M Cos		-	\$ 0.15	\$ 0.89	\$ 2.11	\$ 2.59	\$	39.58	\$ 45.32
To	tal Avoided Capital & Increased Revenue	\$	-	\$ 1.70	\$ 7.44	\$ 13.97	\$ 17.37	\$	226.81	\$ 267.29
	Total Annual Benef			\$ 2.99	\$ 11.75	\$ 22.13	\$ 27.84	\$	387.37	\$ 452.08

<sup>&</sup>lt;sup>4</sup> Appropriate contingency for materials and labor is included in the cost estimate to account for estimate uncertainty. In addition to contingency, several risks were identified and monetized. The Expected Monetary Value (EMV) of project risks is included in the estimate and the top risks are detailed in section 4.1. Total contingency (estimate uncertainty and risk EMV) is approximately 5.8%, which is within the PMCoE normal range. The contingency is deemed appropriate based on estimate maturity and firm contract pricing for materials.

<sup>&</sup>lt;sup>5</sup> There will be no AFUDC, as AMI meters are placed in-service and considered used and useful upon installation.

# **Financial Analysis**

(\$ in Millions)	2016	2017	2018	2019	2020	2021
Project Capital Expenditures	0.05	4.72	72.47	98.39	93.64	8.87
Project O&M Expenses	-	-	0.02	-	-	-
Net Income	-	(0.1)	(2.1)	(0.1)	4.3	9.9
Return on Equity (%)	- 1.2%	- 6.7%	- 5.6%	- 0.1%	3.9%	10.3%

# **Regulatory Revenue Lag**

(\$ in Millions)	2016	2017	2018	2019	2020	2021
Pro Forma Annual Revenue	-	-	0.6	9.9	22.7	33.8
Annual Revenue Requirement	-	0.6	9.9	22.7	33.8	33.7
Regulatory Revenue Lag	-	(0.6)	(9.3)	(12.8)	(11.1)	0.1

Detailed financial analysis is presented in Appendix 2.

# Risks & Mitigations

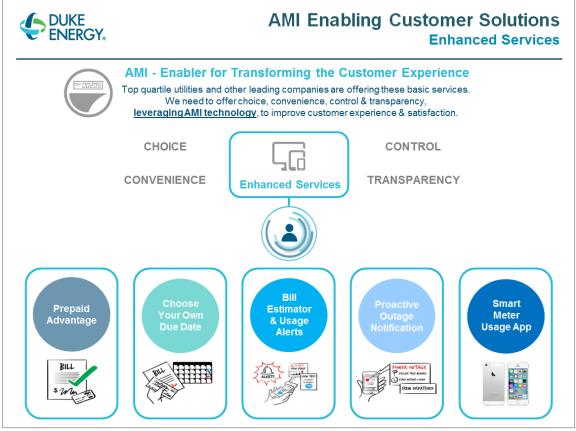
Top Risks	Impact	Discussion & Mitigation
Communications Equipment Requirements Exceed Plan	Financial	If more range extenders and/or CGRs are needed for the mesh network to communicate, then the project direct materials costs and installation costs will exceed budget.
		Detailed network design will be obtained prior to deployment. Appropriate contingency is included in cost.
Installation Vendor Underbid	Financial	If installation vendor underestimates cost, or costs to support equipment installation increase (e.g. gas prices), then equipment installations costs will exceed budget.
motaliation vehicle endersia	Tinanolai	Proactive auditing of contractors and Duke resources will be performed over the life of the project.
Installation Vendor Pricing Bid		If the assumption that installation vendor pricing bids will be similar to DEC and DEI RFQ pricing is incorrect, then installation costs may exceed budget.
is not similar to DEC or DEI AMI RFQs	Financial	Estimated installation costs are based on the highest vendor responses to the DEI AMI and DEC AMI RFQ's with an added \$1 per meter and 5% contingency for future rate discussions.
Increase in Required 4G Cellular (Direct Connect)	Financial	If more 4G cellular meters are required due to poor mesh communications, then the project direct materials costs may exceed budget and installation costs may increase due to revisits.
Meters		Detailed design will be obtained prior to deployment. Appropriate contingency is included in cost estimate.
		If one of the installation vendors is unable to adequately staff or meet deployment expectations, then the project deployment schedule could be delayed.
Resource Constraint (Meter Installation Vendors)	Financial	Project plans to utilize proven vendors from predecessor/on-going AMI projects at Duke. Three vendors will be used to mitigate risk of nonperformance from any one vendor. Also plan to include additional vendors under a Master Agreement, in case the need arises to move quickly to another vendor.
Dolov in MDM CIM		If the Phase 1 go-live for the MDM-CIM billing integration project is delayed by 30 days or more, then the deployment start date would be delayed.
Delay in MDM-CIM Integration project	Financial	Project will work closely with the MDM-CIM project team to proactively identify any potential delays. Pre-Scale Deployment timeline includes contingency to account for reasonable delays to MDM-CIM go-live.

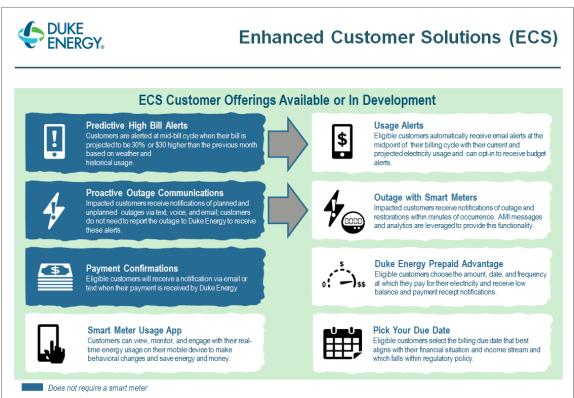
Resource Constraint (Availability of Skilled Mitigation Resources)	If skilled mitigation resources are limited or unavailable, then the necessary level of investigation, data diagnostics, and meter data interpretation necessary to resolve problems will not occur, resulting in delays to the project deployment schedule and certification of meters.  Resource constraint probability is low. Contingency plan includes utilizing Itron resources for mitigation.
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# **Stakeholder Discussion**

Stakeholder	Discussion of Interest & Impact	Assessment
Customers	<ul> <li>Project will bring AMI capabilities to 1.56 million customers in DEP, allowing DEP customers to receive all of the AMI-enabled products and services offerings that will be available in neighboring jurisdictions.</li> <li>The Enhanced Customer Solutions enabled by AMI will improve customer experience and satisfaction by offering increased choice, control,</li> </ul>	F
	<ul> <li>convenience, and transparency.</li> <li>Deployment methodology will leverage experience from predecessor AMI deployments, including approach to customer awareness and deployment information.</li> </ul>	
Community	One benefit of AMI is the ability to remotely complete certain routine work such as disconnects, reconnects, and meter reads. This will result in a reduction in the amount of miles driven by the Company, reducing its overall carbon footprint.	F
	AMI deployment will enable renewable energy customers to have increased visibility into their energy profile.	
Employees	Project aligns with company's Road Ahead goals of enhancing operational efficiencies, supporting achievement of the company's financial objectives through O&M reductions, and improving the lives of our customers through enhanced customer offerings.	F
	<ul> <li>Impacted employee stakeholder groups have been consulted in development of this effort and will continue to be actively engaged throughout deployment.</li> </ul>	
Shareholders	Project will enable enhanced customer offerings with the objective of improving customer satisfaction, reduce operating costs by automating meter reading and enabling remote connects and disconnects, and increase revenue capture by reducing theft, tampering, and equipment failures	F
Regulators	NC Public Staff and SC Office of Regulatory Staff have expressed interest in the timing of a full roll-out of AMI for DEP. In its March 29, 2017 Order accepting the 2016 SGTPs, the NCUC directed DEP and DEC to provide specific plans on AMI deployments in filed SGTPs prior to beginning deployment.	N
	DEP plans to file an AMI opt-out tariff; however, the timing is contingent upon Commission approval of the DEC AMI opt-out tariff.	
Note: Favorable (	F); Unfavorable (U); Neutral (N)	

### **Appendix 1** ECS Program





# **Appendix 2** | Financial Analysis

Income Statement View (\$ in millions)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Retail Revenues															
Retail Rate Case Revenues	-	-	0.6	9.9	22.7	33.8	33.7	31.0	28.5	28.5	28.5	28.5	28.5	21.4	21.4
Operating Expenses	-	-	(1.7)	(3.8)	(5.6)	(6.0)	(6.2)	(6.3)	(6.3)	(6.3)	(6.4)	(6.4)	(6.5)	(6.5)	(6.5)
Operating Savings	-	-	1.3	4.3	8.2	10.5	10.8	11.2	11.5	11.8	12.2	12.6	12.9	13.3	13.7
Operating Income	-	-	0.2	10.4	25.3	38.3	38.3	35.9	33.7	34.0	34.3	34.7	34.9	28.2	28.6
Depreciation Expense	-	(0.2)	(2.7)	(8.5)	(14.9)	(18.4)	(18.7)	(18.8)	(18.9)	(19.0)	(19.1)	(19.2)	(19.6)	(20.1)	(20.4)
EBIT	-	(0.2)	(2.5)	1.9	10.4	19.9	19.6	17.1	14.8	15.0	15.2	15.5	15.3	8.1	8.2
Interest Expense	-	-	(0.7)	(2.1)	(3.5)	(3.8)	(3.3)	(2.9)	(2.5)	(2.2)	(1.9)	(1.7)	(1.6)	(1.4)	(1.3)
Income Taxes	-	0.1	1.3	-	(2.6)	(6.1)	(6.2)	(5.4)	(4.7)	(4.9)	(5.0)	(5.2)	(5.3)	(2.6)	(2.6)
Net Income	-	(0.1)	(1.9)	(0.2)	4.3	10.0	10.1	8.8	7.6	7.9	8.3	8.6	8.4	4.1	4.3
Owners' Equity	_	2.1	36.5	77.4	109.5	96.5	82.6	71.3	62.2	55.2	49.4	43.6	41.0	36.9	31.1
ROE	- 1.2%	- 6.7%	- 5.6%	- 0.1%	3.9%	10.3%	12.2%	12.4%	12.3%	14.4%	16.6%	19.4%	20.9%	11.3%	13.8%
Regulatory Revenue Lag (\$ in millions)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Pro Forma Annual Retail Revenue	-	-	0.6	9.9	22.7	33.8	33.7	31.0	28.5	28.5	28.5	28.5	28.5	21.4	21.4
Annual Revenue Requirement	-	0.6	9.9	22.7	33.8	33.7	31.0	28.5	26.4	24.8	23.4	22.0	21.4	20.7	19.6
Regulatory Lag	-	(0.6)	(9.3)	(12.8)	(11.1)	0.1	2.7	2.5	2.1	3.7	5.1	6.5	7.1	0.7	1.8
Economic Return (\$ in thousands)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Direct Method															
EBITDA	-	(26)	140	10,467	25,325	38,238	38,275	35,939	33,701	34,004	34,318	34,643	34,978	28,223	28,582
Taxes on EBITDA	-	10	(53)	(3,978)	(9,624)	(14,530)	(14,544)	(13,657)	(12,806)	(12,922)	(13,041)	(13, 164)	(13,292)	(10,725)	(10,861)
Depreciation Tax Shield	-	60	1,040	3,214	5,663	6,983	7,119	7,150	7,187	7,227	7,269	7,311	7,436	7,621	7,751
Change in Deferred Taxes	-	730	4,885	13,382	18,989	15,784	8,620	3,847	(102)	(4,276)	(6,512)	(6,714)	(6,322)	(5,835)	(5,902)
Capital Expenditures	(49)	(4,721)	(72,681)	(98,902)	(94,445)	(9,733)	(1,070)	(1,344)	(1,558)	(1,632)	(1,658)	(1,661)	(8, 185)	(6,473)	(3,729)
Unlevered After-Tax Cash Flows	(49)	(3,948)	(66,669)	(75,816)	(54,092)	36,741	38,400	31,936	26,422	22,403	20,377	20,415	14,616	12,812	15,841
Interest Expense	(0)	(39)	(719)	(2,122)	(3,480)	(3,836)	(3,336)	(2,866)	(2,485)	(2, 186)	(1,948)	(1,733)	(1,575)	(1,449)	(1,266)
Interest Expense Tax Shield	`o´	Ì15	273	806	1,322	1,458	1,268	1,089	944	831	740	658	599	551	481
Debt Financing/(Repayment)	23	1,802	30,577	36,220	28,460	(11,480)	(12,354)	(10,020)	(8, 109)	(6, 162)	(5,151)	(5,106)	(2,379)	(3,641)	(5,060)
Levered After-Tax Cash Flows	(26)	(2,170)	(36,537)	(40,912)	(27,789)	22,882	23,977	20,139	16,772	14,885	14,018	14,234	11,260	8,272	9,996

### **Sensitivities**

The financial analysis above reflects rates effective 2018 resulting from the rate case filed in 2017 and subsequent rate cases every year until 2023 and every five years thereafter. Sensitivity shown below reflects alternative assumptions related to timing of the next rate case.

		Rates	Unlevered
Scenario	Rate Case	Effective	Return
Base Case	2018	2019	6.7%
Sensitivity 1	2019	2020	6.2%
Sensitivity 2	2020	2021	5.2%
Sensitivity 3	2021	2022	4.2%

Oct 20 2017

	Initiative Name
Initiative 1	AMI/Smart Meter
DCD Advesses	1,555,000

							(Actuals)																					
Capital - Program	Costs Initial Cap	pital					Actuals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
Asset	Technology	Initiative	Cost Type	Cost Subtype	Description	Total Cost	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
Customer Assets	AMI/Smart Meta	er AMI/ Smart Meter	Field Technology	Equipment	Costs of Communication Equipment								\$ .	\$ .	\$ .	\$	\$	· \$	\$ .	\$ .	\$	- \$	\$	- \$	\$ -	\$ .	\$ .	\$ 20,491,975
Customer Assets	AMI/Smart Mete	r AMI/Smart Meter	Field Technology	Equipment	Cost of Meters								\$ .	\$ .	\$ .	\$	\$ .	. \$ .	\$ .	\$ .	\$	- 8 -	\$	- \$	\$ -	\$ .	\$ .	\$ 177,546,284
Customer Assets	AMI/Smart Mete		Field Technology	Contractor Labor	Installation & Vendor Services (e.g. Itron)								\$ .	\$ .	\$ .	\$	\$	. \$ .	\$ ·	\$	\$	- 8 -	\$	· \$ ·	5 -	s .	S .	\$ 42,112,870
Customer Assets	AMI/Smart Mete		Field Technology	Internal Labor	Project Management Labor	\$ 10,173,262	\$ 45,913	\$ 749,467	\$ 2,979,202	\$ 3,137,966	\$ 2,876,786	\$ 383,928	\$ -	\$	\$ .	\$	· \$ -	- \$ -	\$ -	\$ .	\$	· \$ -	\$	. \$	S -	\$ .	18 -	\$ 10,173,262
Customer Assets	AMI/Smart Mete	AMI/Smart Meter	Field Technology		Other Labor (e.g. Billing, Telecom)	\$ 1,826,789 1	\$ ·	\$ 74,632	\$ 540,502	\$ 564,655		\$ 89,974		\$ .	\$ .	\$	\$	· \$	\$ .	8 -	\$	\$ -	\$	- \$	\$ .	\$ .	8 .	\$ 1,826,789
Customer Assets	AMI/Smart Mete	MI/Smart Meter	Field Technology	Internal Labor	Labor to Optimize Network	\$ 6,566,735	\$ -	\$ .	\$ 1,600,690	2,153,257	\$ 2,186,834	\$ 625,953		\$ .	\$ .	\$	\$ .	. \$ -	8 -	\$ .	\$	\$ ·	\$	- \$ -	\$ .	\$ .	18 -	\$ 6,566,735
Customer Assets	AMI/Smart Mete	MI/Smart Meter	Eng. & Other Service	es Contingency	Contingency (Estimate Uncortainty)	\$ 11,516,547	s	\$ 379,156	\$ 1,895,781	1,895,781	1,895,781	\$ 5,450,046		\$ .	\$ .	\$	\$ .	- \$ -	8 -	8 -	\$	\$ .	\$	· \$ ·	\$ -	\$ .	8 .	\$ 11,516,547
Customer Assets	AMI/Smart Mete	# AMI/Smart Meter	Eng. & Other Service	es Contingency	Contingency (Risk)	\$ 3,670,524	\$ ·	\$ 120,844	\$ 604,219	\$ 604,219	\$ 604,219	\$ 1,737,025	\$ .	\$ .	\$ .	8	\$ -	· \$ ·	s .	\$	\$	\$ .	\$	- 3	\$ -	\$ .	18 -	\$ 3,670,524
Customer Assets		r AMI/Smart Meter	Eng. & Other Service	es Other	Overhead Allocations	\$ 2,471,519 1	\$ 3,513	\$ 37,752	\$ 662,625	\$ 875,459	842,025	\$ 50,145	\$ -	\$ -	\$ .	\$	\$ .	· \$	\$ .	\$ .	\$	\$ .	\$ .	. 8	\$ .	\$ .	18 .	\$ 2,471,519
Customer Assets	AMU/Smart Mete	# AMI/Smart Meter	Eng. & Other Service	esOther	Labor Escalation	\$ 1,766,413	\$ ·	\$ .	\$ 241,160	\$ 592,885	806,986	\$ 125,383	\$	\$ -	\$ .	\$	\$	· \$ ·	\$ .	\$ .	\$	\$ .	\$	- 8	\$ -	\$ -	\$ .	\$ 1,766,413
						\$ 278,142,919	\$ 49,426	\$ 4,721,116	\$ 72,467,443	98,390,463	93,644,950	\$ 8,869,521																\$ 278,142,919
O&M - Program C	osts Non-Recur	ring O&M					Actuals	Year 1	Year 2	Year 3	Year 4	Year S	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
Asset	Technology	Initiative	Cost Type	Cost Subtype	Description	Total Cost	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
		MI/Smart Meter		Equipment	Field Tools	\$ 18,626 5	\$ -		\$ 18,626	3 .	ş .	\$ .	\$ -	\$ -	\$ .	\$	\$	. 8 -	\$ .	\$ .	\$	\$ .	\$ .	· \$ ·	\$ -	\$ -	\$ .	\$ 18,626
Customer Assets	AMI/Smart Mete	AMI/ Smart Meter	Eng. & Other Service	esContingency	Contingency (Estimate Uncertainty)	\$ 932 5	\$	\$ -	\$ 932			. \$	\$ -	\$ -	\$ .	\$	S -	- \$ -	\$ .	\$ .	\$	\$ .	\$	- S -	\$ .	\$ -	\$ -	\$ 932
						\$ 19,558 \$	ş -	\$ .	\$ 19,558			\$ .																\$ 19,558

O&M - Program C	Costs Non-Recurr	ing O&M					Actual	is Year t	Year 2	Year 3	Year 4	Year S	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
Asset	Technology	Initiative	Cost Type	Cost Subtype	Description	Total Cost	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
Customer Assets	AMI/Smart Meter	AMI/Smart Meter	Field Technology	Equipment	Field Tools	\$ 18,62	\$ \$	. \$	\$ 18,62	\$	\$	\$	. \$	- \$	\$ .	· \$ ·	\$ .	\$ -	\$ .	\$ .	\$ .	\$	· \$ ·	\$ .	\$ -	\$ .	\$	- \$ 18,626
Customer Assets	AMI/Smart Meter	AMI/Smart Meter	Eng. & Other Servi	es Contingency	Contingency (Estimate Uncertainty)	\$ 93.	2 \$	- \$	\$ 93	2 \$	\$	8	- S	- \$	\$	· \$ ·	s .	\$ -	\$ .	\$ .	S .	\$	. \$	\$ -	\$ .	. \$	\$	- \$ 932
						\$ 19.55	3 5	- 5	\$ 19.55	8 5	. 5	. 5																\$ 19,558

Capital - Recurre	g Costs						Actuals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
Asset	Technolo	ogy initiative	Cost Type	Cost Subtype	Description	Total Cost	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
Customer Assets	AMI/Smart M	leter AMI/ Smart Meter	Field Technology	Equipment	Annual Costs assoc, with Comm Failures (N	\$ 12,553,208 \$	3	· \$ ·	\$ .	\$ .	\$ .	\$ 3,284	\$ 25,390	\$ 93,086 \$	187,203	243,648	\$ 261,419	261,419 \$	5,221,449 \$	3,912,381	\$ 1,822,095 \$	45,000 \$	45,000	\$ 83,629 \$	149,559 \$	198,648 \$	222,986 \$	12,776,194
Customer Assets	AMI/Smart M	leter AMI/ Smart Meter	Field Technology	Equipment	Annual Costs assoc. with Comm Failures (L	\$ 3,495,974 \$		· \$ ·	\$ 14,023	\$ 34,527	\$ 42,419	\$ 28,434	\$ 44,687	\$ 45,821 \$	46,954	48,088	\$ 49,222	50,356 \$	412,279 \$	324,039	\$ 172,279 \$	64,891 \$	56,025	\$ 598,652 \$	1,119,897 \$	355,380 \$	60,560 \$	3,556,534
Customer Assets	AMI/Smart M	leter AMI/Smart Meter	Field Technology	Equipment	Annual Costs assoc, with Motor Failures & 0	\$ 18,985,880 \$	5	· \$ ·	\$ 168,727	\$ 401,580	\$ 636,155	\$ 704,267	\$ 869,833	\$ 1,072,692 \$	1,189,034 \$	1,202,679	\$ 1,206,975	1,206,975 \$	2,405,988 \$	2,089,540	\$ 1,584,245 \$	1,154,659 \$	1,154,659	\$ 1,011,874 \$	667,521 \$	258,476 \$	53,904 \$	19,039,783
Customer Assets	AMI/Smart M	leter AMI/Smart Meter	Field Technology	Equipment	Annual Costs assoc with Motor Failures (La	\$ 2,176,939 \$		\$ .	\$ 30,940	\$ 75,194	\$ 121,667	\$ 127,134	\$ 129,684	\$ 132,235 \$	134,785		\$ 139,886	142,437 \$	144,987 \$	147,537	\$ 150,088 \$	152,638 \$	155,189	\$ 136,760 \$			- \$	2,176,939
						\$ 37,212,001 \$	;	· \$ -	\$ 213,690	\$ 511,301	\$ 800,241	\$ 863,119	\$ 1,069,594	\$ 1,343,834 \$	1,557,977 \$	1,631,750 \$	\$ 1,657,501	1,661,186 \$	8,184,702 \$	6,473,498	\$ 3,728,707 \$	1,407,188 \$	1,410,873	\$ 1,828,915 \$	2,025,457 \$	842,466 \$	337,450 \$	37,549,450

O&M - Recurring C	asts						Actuals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
Asset	Technology	Initiative	Cost Type	Cost Subtype	Description	Total Cost	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
Customer Assets	AMI/Smart Meter	AMI/ Smart Meter	Field Technology	Other 0&M	Cellular Costs (WAN)	\$ 25,680,383 \$	\$	\$ .	\$ 641,022	\$ 1,190,486	\$ 1,527,248	\$ 1,527,248 \$	1,527,248	\$ 1,527,248 \$	1,527,248	\$ 1,527,248	\$ 1,527,248	\$ 1,527,248	1,527,248	1,527,248	\$ 1,527,248	\$ 1,527,248	\$ 1,527,248	1,471,355 \$	1,338,977	1,184,326 \$	1,107,000	26,787,383
			Field Technology	Other O&M	Data Analytics Labor	\$ 2,252,056 \$	\$	\$	\$ -	\$ .	\$ .	\$ 65,340 \$	134,082	\$ 137,484 \$	140,885	\$ 144,287		\$ 151,091	154,493	157,895		\$ 164,699	\$ 168,101 \$	171,503 \$			178,306	\$ 2,430,362
Customer Assets	AMI/Smart Meter	AMI/ Smart Meter	Field Technology	Other O&M	AMI Operators Labor	\$ 2,580,211 \$	\$ -	\$ .	\$ .	\$ .	\$ .	\$ 74,861 \$	153,619	\$ 157,517 \$	161,414	\$ 165,312	\$ 169,210	\$ 173,107	177,005	\$ 180,902	\$ 184,800	\$ 188,698	\$ 192,595 \$	196,493 \$	200,390	204,288 \$	204,288	2,784,499
			Field Technology	Other O&M	Billing Labor	\$ 21,852,634 \$	\$ ·	\$ .	\$ 207,245	\$ 638,669	\$ 1,093,680	\$ 1,122,912 \$	1,152,144	\$ 1,181,376 \$	1,210,608	\$ 1,239,840	\$ 1,269,072	\$ 1,298,304	1,327,536	1,356,768	\$ 1,386,000	\$ 1,415,232	\$ 1,444,464 \$	1,473,696 \$	1,502,928		1,532,160	23,384,794
Customer Assets	AMI/Smart Meter	AMI/ Smart Meter	Field Technology	Other O&M	Telecom Labor	\$ 3,287,232 \$	\$ <u> </u>	\$ -	s -	\$ ·	\$ .	\$ 185,370 \$	190,195	\$ 195,021 \$	199,846	\$ 204,672	\$ 209,498	\$ 214,323	219,149	\$ 223,974	\$ 228,800	\$ 233,626	\$ 238,451 \$	243,277 \$	248,102 \$	252,928 \$	252,928	3,540,160
						\$ 55,652,516 \$		\$ -	\$ 848,267	\$ 1,829,155	\$ 2,620,928	\$ 2,975,730 \$	3,157,288	\$ 3,198,645 \$	3,240,002	\$ 3,281,359	\$ 3,322,716	\$ 3,364,073 :	3,405,430	3,446,787	5 3,488,144	\$ 3,529,501	\$ 3,570,859 \$	3,556,323 \$	3,465,302 \$	3,352,008 \$	3,274,682	58,927,198

	Actuals	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
Total Cost	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
Capital Project Costs	\$ 0.0	5 5 4.72	\$ 72.47	\$ 98.39	\$ 93.64	\$ 8.87	\$ -	\$ -	\$ -	\$ -	\$ .	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ .	5 . \$		\$ 278.14
Capital Recurring Costs	\$	. 5 .	\$ 0.21	\$ 0.51	\$ 0.80	\$ 0.86	\$ 1.07	\$ 1.34	\$ 1.56	\$ 1.63	\$ 1.66	\$ 1.66	\$ 8.18	\$ 6.47	\$ 3.73	\$ 1.41	\$ 1.41	\$ 1.83	\$ 2.03	\$ 0.84 \$	0.34	\$ 37.20
O&M Program Costs	\$	- \$ -	\$ 0.02	\$ -	\$ -	\$ .	\$ .	\$ -	\$ .	\$ .	\$ .	\$ .	\$ .	\$ .	\$ .	\$ .	\$ .	\$ -	\$ .	5 . \$		\$ 0.02
O&M Recurring costs	5	· \$ .	\$ 0.85	\$ 1.83	\$ 2.62	\$ 2.98	\$ 3.16	\$ 3.20	\$ 3.24	\$ 3.28	\$ 3.32	\$ 3.36	\$ 3.41	\$ 3.45	5 3.49	\$ 3.53	\$ 3.57	\$ 3.56	\$ 3.47	\$ 3.35 \$	3.27	\$ 55.67
Total Capital	\$0.0	5 \$4.72	\$72.68	\$98.90	\$94.44	\$9.73	\$1.07	\$1.34	\$1.56	\$1.63	\$1.66	\$1.66	\$8.18	\$6.47	\$3.73	\$1.41	\$1.41	\$1.8	\$2.03	\$0.84	\$0.34	\$315.34
Total O&M	\$0.0	0 \$0.00	\$0.87	\$1.83	\$2.62	\$2.98	\$3.16	\$3.20	\$3.24	\$3.28	\$3.32		\$3.41	\$3.45	\$3.49	\$3.53	\$3.57	\$3.54	\$3.47	\$3.35	\$3.27	\$55.69
Total Annual Costs	\$0.0	5 \$4.72	\$73.55	\$100.73	\$97.06	\$12.71	\$4.23	\$4.54	\$4.80	\$4.91	\$4.98	\$5.02	\$11.59	\$9.92	\$7.22	\$4.94	\$4.98	\$5.35	\$5.50	\$4.19	\$3.61	\$371.03

	A	ctuats	$\overline{}$	Year 1	Г	Year 2	Г	Year 3	Г	Yoar 4	г	Year 5	Г	Years 6-20	-	Total
Total Coat (\$ in Militions)		2018		2017		2016		2018		2020		2021				
Capital Project Costs	\$	0.05	\$	4.72	\$	72 47	\$	98.39	\$	93.64	\$	8 87	\$		\$	278.1
Capital Recurring Costs	\$		\$		\$	0 21	\$	0.51	\$	0.80	\$	0.86	\$	35.16	\$	37.5
D&M Program Costs	\$		\$		\$	0.02	\$		\$		\$		\$		\$	0.0
O&M Recurring costs	\$	-	\$		\$	0.85	T	1.83	\$	262	\$	2.98	\$	60.66	\$	58 9
AND REPORT AND PARTY AND ADDRESS OF THE PARTY																
Total Capital		0.05	\$	4.72	\$	72.68	\$	98,90	\$	94.44	\$	9.73		35.16	3	315.6
Total O&M	\$		\$	-	\$	0.87	\$	1.83	\$	2.62	\$	2.98	\$	50.66	\$	58.9

	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	1	Check
Project Deployment Capital Costs	Actuals	. 1	. 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	0	1
Field Technology Communications Eng. & Other Services Back Office Systems	\$ 45,913	\$ 4,183,363	\$ 69,063,658	\$ 94,422,120	\$ 89,495,939	\$ 1,506,921	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$	5 -	\$ -	\$ -	\$	- \$ -	5 -	\$ -	\$ 258,717,915	1
Communications	\$ .	\$ -	\$ -	5 -	\$ -	5 -	\$ -	5 -	\$ -	\$ -	\$ .	5 -	\$ -	\$ -	\$ -	\$ -	\$	. \$ .	\$ -	\$ -	\$ -	1
Eng. & Other Services	\$ 3,513	\$ 537,752	\$ 3,403,785	\$ 3,968,343	\$ 4,149,011	\$ 7,362,599	\$ -	\$ -	\$ .	\$ -	5 .	\$ -	\$ -	\$ -	\$ .	\$ -	\$	. \$ .	\$ -	\$ -	\$ 19,425,004	ı
Back Office Systems	\$ .	\$ -	\$ -	\$ .	5 -	5 -	\$ -	\$ -	\$ .	\$ .	\$ -	\$ .	\$ -	\$ -	\$ -	\$ -	\$	. \$	\$ -	5 -	5 -	1
Indirect	\$ .	\$ -	\$ ·	\$ -	5 .	\$ -	\$ -	\$ -	\$ .	\$ -	\$ .	5 -	s -	\$ -	\$	\$ -	\$ .	. \$	\$ .	\$ -	\$ -	1
Other	\$ .	\$ .	\$ -	\$	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$	. \$	\$ -	S -	\$ -	1
Total	\$49,426	\$4,721,116	\$72,467,443	\$98,390,463	\$93,644,950	\$8,869,521	\$0	\$0	\$0	\$0	\$0	\$1	\$1	50	\$0	50	\$	0 \$0	50	\$0	\$270.848.919	\$278,142,640

	1	Year	Year	Year	- 1.	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	
oject On-going Capital Costs	A	ctuals	1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	0
Technology	\$		\$ .	\$ 21	3,690 \$	511,301	\$ 800,241	\$ 863,119	\$ 1,069,594	\$ 1,343,834	\$ 1,557,977	\$ 1,631,750	\$ 1,657,501	\$ 1,661,186	\$ 8,184,702	\$ 6,473,498 \$	3,728,707	1,407,188	\$ 1,410,873	\$ 1,828,915	\$ 2,025,457	842,466	\$ 37,212,001
munications	\$		\$ .	\$	- 5		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	5 -	\$ -	\$ - 5	- 5	3 -	5 -	5 -	\$ -	3 -	3 -
& Other Services	\$		\$ .	\$	- 5		\$ -	\$ -	\$ -	5	\$ -	\$ -	\$ -	\$	\$ -	\$ - 5			\$ -	\$ -	\$ .	5 -	\$ -
nmunications g. & Other Services ck Office Systems	\$	-	\$	5	- \$		\$ -	\$ -	\$ -	\$ .	\$ -	\$ ·	5 -	\$ -	\$ .	5 - 5		3 .	s -	\$ -	\$ -	5 -	\$ .
rect	\$	-	\$ .	5	. 5		\$ -	\$ .	\$ -	\$	\$ -	\$ -	\$ -	5 .	\$ .	\$ - 5	- 5		5 -	\$ .	5 -	5 -	\$ -
ner	\$		\$	5	- 5		\$ -	\$ -	\$ -	\$ -	\$ .	\$ .	\$ -	\$ -	\$ .	\$ - 5			5	5	\$ .	3 -	5
Total		\$0	\$		3.680	\$511,301	\$800.241	\$863,119	\$1,069,594	\$1,343,834	\$1,557,977	\$1,631,750	\$1,657,501	\$1,661,186	\$8.184.702	\$6,473,498	\$3,728,707	\$1,407,188	\$1,410,873	\$1,828,915	\$2,025,457	5842,466	\$92,202,603

	Actuals	rear 1	Tear 2	Year s	Tear 4	Tears 6-20	lotai
	2016	2017	2018	2019	2020		
\$	0 \$	5 \$	72 \$	98 \$	94 \$	9 \$	278
	-		0	1	1	36	37
			0			· · · · · · · · · · · · · · · · · · ·	0
			1	2	3	50	56
al	\$0	\$5	\$73	\$99	\$94	\$45	\$315
м			. 1		3	50	56
ts	\$0	\$5	\$74	\$101	\$97	\$95	\$371
	M	2016 \$ 0 \$ - - - - al \$0 M -	\$ 0 \$ 5 \$	2016 2017 2018 \$ 0 \$ 5 \$ 72 \$ - 0 - 0 - 1 1 al \$0 \$5 \$73 M - 1 1	2016   2017   2018   2019	2016 2017 2018 2019 2020 \$ 0 \$ 5 \$ 72 \$ 78 \$ 85 84 \$	2015 2017 2018 2019 2020 2020 5 5 5 7 2 5 80 5 84 5 9 5 5 5 7 2 5 80 5 84 5 9 5 5 5 5 7 2 5 80 5 84 5 9 5 5 7 5 8

Exhibit C Appendix C



# **Program Benefit Inputs**

	Initiative Name	Title
Initiative 1	AMI/ Smart Meter	DEP AMI

<b>Annual Benefits</b>	(\$)				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Asset	Technology	Initiative	Benefit Type	Duke Benefit Description	2017	2018	2019	2020	2021	2022	2023	2024
Customer Assets	AMI/Smart Meter	AMI Deployment	Expense Reduction	Meter Reading Cost Reduction	\$ -	\$ -	\$ 400,000	\$ 850,000	\$ 3,120,000	\$ 3,213,600	\$ 3,310,008	\$ 3,409,308
Customer Assets	AMI/Smart Meter	AMI Deployment	Expense Reduction	Field Metering (Temp to Capital)	\$ -	\$ 975,000	\$ 1,400,000	\$ 1,400,000	\$ -	\$ -	\$ -	\$ -
Customer Assets	AMI/Smart Meter	AMI Deployment	Expense Reduction	Reduced Meter Operations Costs	\$ -	\$ 25,000	\$ 100,000	\$ 100,000	\$ -	\$ -	\$ -	\$ -
Customer Assets	AMI/Smart Meter	AMI Deployment	Expense Reduction	Consumer Order Cost Reduction	\$ -	\$ 128,428	\$ 1,516,821	\$ 2,906,653	\$ 3,704,893	\$ 3,854,586	\$ 3,970,223	\$ 4,089,330
Customer Assets	AMI/Smart Meter	AMI Deployment	Expense Reduction	Consumer Order Cost Reduction (DNP)	\$ -	\$ -	\$ -	\$ 734,924	\$ 936,753	\$ 974,602	\$ 1,003,840	\$ 1,033,955
Customer Assets	AMI/Smart Meter	AMI Deployment	Expense Reduction	Cellular Cost Reduction (SSN APs)	\$ -	\$ -	\$ 14,715	\$ 58,860	\$ 117,720	\$ 121,252	\$ 124,889	\$ 128,636
			<b>Expense Reduction</b>		\$ -	\$ 1,128,428	\$ 3,431,536	\$ 6,050,438	\$ 7,879,366	\$ 8,164,039	\$ 8,408,960	\$ 8,661,229
Customer Assets	AMI/Smart Meter	AMI Deployment	Avoided Costs - O&M	Restoration Cost Reduction - OK on Arrival	\$ -	\$ 50,672	\$ 224,426	\$ 430,062	\$ 548,168	\$ 570,316	\$ 587,426	\$ 605,048
Customer Assets	AMI/Smart Meter	AMI Deployment	Avoided Costs - O&M	Restoration Cost Reduction - Major Storms	\$ -	\$ 60,000	\$ 293,550	\$ 810,900	\$ 981,000	\$ 1,010,430	\$ 1,040,743	\$ 1,071,965
Customer Assets	AMI/Smart Meter	AMI Deployment	Avoided Costs - O&M	Miscellaneous O&M Savings	\$ -	\$ 35,206	\$ 372,771	\$ 873,113	\$ 1,058,007	\$ 1,089,747	\$ 1,122,440	\$ 1,156,113
			Avoided Costs- O&M		\$ -	\$ 145,878	\$ 890,747	\$ 2,114,075	\$ 2,587,175	\$ 2,670,493	\$ 2,750,608	\$ 2,833,126
Customer Assets	AMI/Smart Meter	AMI Deployment	Avoided Costs - Capital	Miscellaneous Capital Savings	\$ -	\$ 11,735	\$ 124,257	\$ 291,038	\$ 352,669	\$ 363,249	\$ 374,147	\$ 385,371
Customer Assets	AMI/Smart Meter	AMI Deployment	Increased Revenue	Non-Technical Line Loss Reduction	\$ -	\$ 1,679,758	\$ 7,259,075	\$ 13,572,782	\$ 16,880,299	\$ 17,136,061	\$ 17,221,742	\$ 17,307,850
Customer Assets	AMI/Smart Meter	AMI Deployment	Avoided Costs - Capital	Reduced Legacy Meter Failures	\$ -	\$ 13,089	\$ 57,303	\$ 108,559	\$ 139,333	\$ 143,351	\$ 147,652	\$ 152,081
			Did not include in econor	nic analysis model	\$ -	\$ 1,704,582	\$ 7,440,635	\$ 13,972,378	\$ 17,372,301	\$ 17,642,662	\$ 17,743,540	\$ 17,845,303
					\$ -	\$ 2,978,888	\$ 11.762.918	\$ 22.136.890	\$ 27.838.842	\$ 28,477,194	\$ 28,903,108	\$ 29.339.658

		Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-20	Total
Total Benefits (\$ in Millio	ons)	2017	2018	2019	2020	2021		
Expense Reduction	Meter Reading Cost Reduction	\$ -	\$ -	\$ 0.40	\$ 0.85	\$ 3.12	\$ 47.63	\$ 52.00
	Field Metering (Temp to Capital)	\$ -	\$ 0.98	\$ 1.40	\$ 1.40	\$ -	\$ -	\$ 3.78
	Reduced Meter Operations Costs	\$ -	\$ 0.03	\$ 0.10	\$ 0.10	\$ -	\$ -	\$ 0.23
	Consumer Order Cost Reduction	\$ -	\$ 0.13	\$ 1.52	\$ 2.91	\$ 3.70	\$ 57.13	\$ 65.39
	Consumer Order Cost Reduction (DNP)	\$ -	\$ -	\$ -	\$ 0.73	\$ 0.94	\$ 14.44	\$ 16.11
	Cellular Cost Reduction (SSN APs)	\$ -	\$ -	\$ 0.01	\$ 0.06	\$ 0.12	\$ 1.80	\$ 1.99
Avoided Costs - O&M	Restoration Cost Reduction - OK on Arrival	\$ -	\$ 0.05	\$ 0.22	\$ 0.43	\$ 0.55	\$ 8.45	\$ 9.70
	Restoration Cost Reduction - Major Storms	\$ -	\$ 0.06	\$ 0.29	\$ 0.81	\$ 0.98	\$ 14.97	\$ 17.11
	Miscellaneous O&M Savings	\$ -	\$ 0.04	\$ 0.37	\$ 0.87	\$ 1.06	\$ 16.15	\$ 18.49
Avoided Costs - Capital	Miscellaneous Capital Savings	\$ -	\$ 0.01	\$ 0.12	\$ 0.29	\$ 0.35	\$ 5.38	\$ 6.15
	Reduced Legacy Meter Failures	\$ -	\$ 0.01	\$ 0.06	\$ 0.11	\$ 0.14	\$ 2.12	\$ 2.44
Increased Revenue	Non-Technical Line Loss Reduction	\$ -	\$ 1.68	\$ 7.26	\$ 13.57	\$ 16.88	\$ 219.30	\$ 258.69
	Total O&M Expense Reductions	\$ -	\$ 1.13	\$ 3.43	\$ 6.05	\$ 7.88	\$ 120.99	\$ 139.48
	Total Avoided O&M Costs	\$ -	\$ 0.15	\$ 0.89	\$ 2.11	\$ 2.59	\$ 39.58	\$ 45.32
	Total Avoided Capital & Increased Revenue	\$ -	\$ 1.70	\$ 7.44	\$ 13.97	\$ 17.37	\$ 226.81	\$ 267.29
	Total Annual Benefits	\$ _	\$ 2.99	\$ 11.75	\$ 22.13	\$ 27.84	\$ 387.37	\$ 452.08

Exhibit C Appendix C

Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20		
2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	1	otal 20 Year
\$ 3,511,587	\$ 3,616,935	\$ 3,725,443	\$ 3,837,206	\$ 3,952,323	\$ 4,070,892	\$ 4,193,019	\$ 4,318,810	\$ 3,858,357	\$ 2,192,148	\$ 416,008	\$ -	\$	51,995,645
\$ 1	\$ -	\$ 1	\$ -	\$ -	\$ -	\$ -	\$ 1	\$ -	\$ -	\$ -	\$ -	\$	3,775,000
\$ -	\$ -	\$ -	\$	225,000									
\$ 4,212,010	\$ 4,338,370	\$ 4,468,521	\$ 4,602,577	\$ 4,740,654	\$ 4,882,874	\$ 5,029,360	\$ 5,180,241	\$ 4,627,945	\$ 2,629,395	\$ 498,985	\$ -	\$	65,381,865
\$ 1,064,974	\$ 1,096,923	\$ 1,129,831	\$ 1,163,725	\$ 1,198,637	\$ 1,234,596	\$ 1,271,634	\$ 1,309,783	\$ 1,170,140	\$ 664,822	\$ 126,164	\$ -	\$	16,115,303
\$ 132,495	\$ 136,470	\$ 140,564	\$ 144,781	\$ 149,124	\$ 153,598	\$ 158,206	\$ 162,952	\$ 145,579	\$ 82,711	\$ 15,696	\$ -	\$	1,988,247
\$ 8,921,066	\$ 9,188,698	\$ 9,464,359	\$ 9,748,289	\$ 10,040,738	\$ 10,341,960	\$ 10,652,219	\$ 10,971,786	\$ 9,802,020	\$ 5,569,076	\$ 1,056,853	\$ -	\$	139,481,060
\$ 623,200	\$ 641,896	\$ 661,153	\$ 680,987	\$ 701,417	\$ 722,459	\$ 744,133	\$ 766,457	\$ 684,741	\$ 389,040	\$ 73,829	\$ -	\$	9,705,429
\$ 1,104,124	\$ 1,137,248	\$ 1,171,365	\$ 1,206,506	\$ 1,242,701	\$ 1,279,982	\$ 1,318,382	\$ 1,357,933	\$ 1,213,156	\$ 689,262	\$ 130,802	\$ -	\$	17,120,052
\$ 1,190,796	\$ 1,226,520	\$ 1,263,316	\$ 1,301,215	\$ 1,340,252	\$ 1,380,459	\$ 1,421,873	\$ 1,464,529	\$ 1,308,387	\$ 743,368	\$ 141,070	\$ -	\$	18,489,182
\$ 2,918,120	\$ 3,005,664	\$ 3,095,834	\$ 3,188,709	\$ 3,284,370	\$ 3,382,901	\$ 3,484,388	\$ 3,588,920	\$ 3,206,284	\$ 1,821,670	\$ 345,701	\$ -	\$	45,314,663
\$ 396,932	\$ 408,840	\$ 421,105	\$ 433,738	\$ 446,751	\$ 460,153	\$ 473,958	\$ 488,176	\$ 436,129	\$ 247,789	\$ 47,023	\$ -	\$	6,163,061
\$ 17,394,390	\$ 17,481,361	\$ 17,568,768	\$ 17,656,612	\$ 17,744,895	\$ 17,833,620	\$ 17,922,788	\$ 18,012,402	\$ 15,701,413	\$ 8,704,326	\$ 1,611,742	\$ -	\$	258,689,884
\$ 156,644	\$ 161,343	\$ 166,184	\$ 171,169	\$ 176,304	\$ 181,593	\$ 187,041	\$ 192,652	\$ 172,112	\$ 97,787	\$ 18,557	\$ -	\$	2,442,755
\$ 17,947,965	\$ 18,051,545	\$ 18,156,057	\$ 18,261,520	\$ 18,367,950	\$ 18,475,366	\$ 18,583,786	\$ 18,693,230	\$ 16,309,655	\$ 9,049,902	\$ 1,677,322	\$ -	\$	267,295,699
\$ 29,787,151	\$ 30,245,906	\$ 30,716,249	\$ 31,198,518	\$ 31,693,058	\$ 32,200,227	\$ 32,720,394	\$ 33,253,936	\$ 29,317,960	\$ 16,440,648	\$ 3,079,877	\$ -	\$	452,091,422

(452,090,970)



#### **AMI / Smart Meter Cost Description Definitions**

Capital - Program Costs Initial Capital	
Description	Definition
	Material costs of the AMI communication devices, including Cisco Connected Grid Routers (CGRs) and Itron Range Extenders (RE), as well as material adders,
Costs of Communication Equipment	including warehousing, handling, installment consumables (nut, bolts, etc.), and sales and use taxes.
Costs of Meters	Material costs of the OpenWay IPv6 mesh meters and 4G cellular (direct connect) meters, as well as material adders.
Installation Cost & Vendor Services	Equipment installation costs, including Duke (internal) and contractor (external) labor
Project Management Labor	Internal Project Management labor costs to support AMI implementation
Other Labor (Billing, Telecom)	Project labor costs for Billing and Telecom resources
Labor to Optimize Network	Field labor to optimize AMI network throughout implementation
Contingency (Estimated Uncertainty)	Contingency representing uncertainty in estimate components (rates, hours, materials, etc.)
Contingency (Risk)	Contingency representing Expected Monetary Value (EMV) of identified risks
Miscellaneous (Optimization Equipment)	Miscellaneous tools, equipment, and supplies required for the AMI equipment installation and project support (e.g. power cords, brackets, office supplies)
Overhead Allocations	Overhead allocations based on Project Management Organization labor
Labor Escalation	Escalation in labor costs based on DOE Escalation Rates

O&M - Program Costs Non-Recurring O&M	
Description	<b>Definition</b>
Field Tools	Optical probes required for AMI meters
Contingency (Estimated Uncertainty)	Contingency representing uncertainty in estimate components (field tools)

Capital - Recurring Costs	
Description	Definition
	Materials costs associated with communication device failures based on expected failure rates and replacement of equipment at the assets' end of life. Includes cost of
Annual Costs assoc. with Comm Failures (Materials)	communication equipment and material adders.
	Labor costs associated with communication device failures based on expected failure rates and replacement of equipment at the assets' end of life. Includes installation
Annual Costs assoc. with Comm Failures (Labor)	labor, testing labor, and labor escalation.
	Materials costs associated with meter failures and new customer meter growth based on expected failure rate and meter population growth rates. Includes cost of meter
Annual Costs assoc. with Meter Failures & Growth (Materials)	equipment and material adders.
	Labor costs associated with meter failures and new customer meter growth based on expected failure rate and meter population growth. Includes cost of installation
Annual Costs assoc. with Meter Failures (Labor)	labor and labor escalation.

O&M - Recurring Costs	
Description	Definition
Cellular Costs (WAN)	Monthly cellular costs paid to Verizon for cellular backhaul on CGRs and 4G cellular (direct connect) meters
Data Analytics Labor	Additional full-time employees (FTEs) required to perform analytics on AMI data and identify non-technical line loss
AMI Operators Labor	Additional FTEs required to operate the AMI network and Head-End (HE) system, ensuring optimal communications and remote data collection for billing
Billing Labor	Additional FTEs required for data management in the billing department
Telecom Labor	Additional FTE required to manage AMI telecommunications

Owner: Grid Solutions

Location and Program Area of Project: Duke Energy Progress

Project Title - line 1: DEP

Project Title - line 2 (blank if N/A):

AMR to AMI Deployment

Deploy AMI technologies in the DEP territories

Description of Effort: based upon the mesh solution

Project Ranking: Green III
Estimate Purpose: Commit Gate
Preparation Date (planned approval date): 17-May-17

Revision Number:

IPRS Number (from Reporting Team):

Estimate Number (from Cost Est Log):

Total Project Estimate

IPRS #317

Est #336

\$278,162,475

Summary Sheets title blocks - Line 1: Class 2 - (5% to 15%)

Summary Sheets title blocks - Line 2: COST ESTIMATE SUMMARY

Detail Sheets title blocks - Line 1: Class 2 - (5% to 15%)
Detail Sheet title blocks - Line 2: COST ESTIMATE DETAIL

 Wage1 (e.g. Internal, Staff Aug, Contractor):
 0.00

 Wage2:
 0.00

 Wage3:
 0.00

 Wage4:
 0.00

 Wage5:
 0.00

Wage rates are weighted average for project

Commit Date of Project (anticipated): 17-May-17
Start Date of Project (assumed): 01-Jul-16
Build Date of Project (anticipated): 21-Sep-17
End Date of Project (assumed): 30-Jun-21
Actual Cost Through: 28-Feb-17

(Actuals costs typically shown for reference only)

Work Flow Phase | Line Item | WBS # / ID | Revision | Number | Materials



REDACTED

DESCRIPTION

IT&T/All Other Departments

UNIT QTY

WH

Grid Solutions Duke Energy Progress DEP AMR to AMI Deployment

Class 2 - (5% to 15%) COST ESTIMATE DETAIL

MATL

TOTAL WORK HOURS

SUB

Issue Date: 05/17/17 Revision No: IPRS No: IPRS #317

Estimate No: Est #336 Spent to Date - For Reference Only Contingency Percentage 3,39% LABOR \$ MATERIAL \$ EQUIPMENT \$ SUBCONT. \$ 176,548,097 21,508,788

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	Itron Meters			<del> </del>	1,555,256	1	-										İ		-1-
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	2S 200	Capital	All Other Departments	EA	1,359,411													3 00%	%
	2S 320	Capital	All Other Departments	EA	64,525	1												3 00%	%
	3S 20	Capital	All Other Departments	EA	29,441													3.00%	
	5S 20	Capital	All Other Departments	EA	9,166						1							3.00%	%
	9S 20	Capital	All Other Departments		31,189			-										3 00%	
	12S 200	Capital	All Other Departments	EA	27,640		<del></del>				l	ļ						3.00%	
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	5S 20	Capital	All Other Departments		810	I												3.00%	
	9S 20	Capital	All Other Departments	EA	1,805					l								3 00%	
	12S 200	Capital	All Other Departments	EA	36	I				I	J							3.00%	
	12S 320	Capital	All Other Departments		1	1	1											3.00%	
	16S 320	Capital	All Other Departments	EA	785	I												3.00%	
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																		3.00%	
	Meter Installations	1					1											·	1
Staffing Plan	Field Metering	Capital	All Other Departments	EA	103,126	T	1	1			1			1					-1
Subserv	Contractors	Capital	All Other Departments	EA	1,452,130	1	1					1							
		1	1	T	1	1	·	1											
	Electric Accessories	Capital	All Other Departments	LS	0.64%	l	1		159078269		l			1,021,282		1,021,282		5.00%	% I
	The Electric Accessories line covers seals, retaining rings, Plexiglas cove	rs. etc. for r	replacements. These	are not cov	ered in worki	na stock -	the project	orders them		e the volumes a	e high					.,,,,02		5.5070	-
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	Sockets (for A and K based meters)	Capital	All Other Departments	EA	3,866	<b></b>	l	330.00					1,275,780			1,275,780		5 00%	<u> </u>
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	Connected Grid Routers (CGR)	Capital	All Other Departments	EA	3,675		<del> </del>											5 00%	v
Staffing Plan	Inetale	Capital	All Other Departments	EA	3,675		·											30078	0
Staffing Plan	Mitigation installs	Capital	All Other Departments	EA	368														
Otaling Flair	I wingawii inotalio	Capitai	All Other Departments		300														
	Range Extenders (RFRE)		4 // Oth D	EA	10,000													# 000V	
O4-46 DI	Range Extenders (RPRE)	Capital	All Other Departments				·											5 00%	6
Staffing Plan	Installs	Capital	All Other Departments	EA	10,000														-
Staffing Plan	Mitigation installs	Capital	All Other Departments	EA	1,000														
	Communication Accessories																		
	Power Cords	Capital	All Other Departments	EA	11,000													5.00%	
	Brackets	Capital			15,043		i				ł	1							
			All Other Departments	EA													Charles To Control of	5 00%	
	Other	Capital	All Other Departments	LS	2.00%	l			15432325					308,647		308,647		5 00% 5 00%	
	Other In addition to power cords and brackets, other communications accessor	Capital	All Other Departments	LS	2.00%	R costs			15432325					308,647		308,647			
	in addition to power cords and brackets, other communications accessor	Capital	All Other Departments	LS	2.00% nder and CC	R costs			15432325					308,647		308,647			
	In addition to power cords and brackets, other communications accessor Tools and Equipment	Capital	All Other Departments oproximately 2% of the	LS e range exte	2.00%	R costs												5 00%	6
0 38	In addition to power cords and brackets, other communications accessor  Tools and Equipment  Misc. field issue (meter boxes, anchor sockets, etc.)	Capital	All Other Departments proximately 2% of the	LS e range exte	2.00% nder and CC	R costs			413698					413,698		413,698			6
0 38	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Milgaton / Installation Tools	Capital nes were ap	All Other Departments DEPARTMENT OF THE PROPERTY OF THE PROPER	70.00% 20.00%	2.00% nder and CC	R costs			413698 118199					413,698 118,199		413,698 118,199		5.00% 5.00% 5.00%	6
0 38	In addition to power cords and brackets, other communications accessor  Tools and Equipment  Misc. field issue (meter boxes, anchor sockets, etc.)	Capital les were ac Capital	All Other Departments proximately 2% of the	LS e range exte	2.00% nder and CC	R costs			413698					413,698		413,698		5.00% 5.00% 5.00%	6
0 38	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Milgaton / Installation Tools	Capital nes were ap Capital Capital	All Other Departments DEPARTMENT OF THE PROPERTY OF THE PROPER	70.00% 20.00%	2.00% nder and CC	R costs			413698 118199					413,698 118,199		413,698 118,199		5.00%	6
0.38	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitigation / Installation Tools Other	Capital nes were ap Capital Capital	All Other Departments DEPARTMENT OF THE PROPERTY OF THE PROPER	70.00% 20.00%	2.00% nder and CC 590,997 1 1	R costs			413698 118199					413,698 118,199		413,698 118,199		5.00% 5.00% 5.00%	6
0 38	in addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitgathon / installation Tools Other Miscellaneous	Capital  Capital  Capital  Capital  Capital	All Other Departments proximately 2% of the All Other Departments All Other Departments All Other Departments	70.00% 20.00% 10.00%	2.00% nder and CC	GR costs			413698 118199 59100					413,698 118,199 59,100		413,698 118,199 59,100		5.00% 5.00% 5.00% 5.00%	6
0 38	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitigation 7 installation Tools Other Miscellaneous Printing	Capital Capital Capital Capital Capital Capital	All Other Departments proximately 2% of the All Other Departments All Other Departments All Other Departments All Other Departments	70.00% 20.00% 10.00%	2.00% nder and CC 590,997 1 1	R costs			413698 118199 59100 668760					413,698 118,199 59,100		413,698 118,199 59,100		5.00% 5.00% 5.00% 5.00% 5.00%	6
0 38	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitigation / Installation Tools Other Miscellaneous Printing Communications	Capital Capital Capital Capital Capital Capital Capital Capital	All Other Departments DIOXIMately 2% of the All Other Departments	70.00% 20.00% 10.00% 43.00% 25.00%	2.00% nder and CC 590,997 1 1	R costs			413698 118199 59100 668760 388814					413,698 118,199 59,100 668,760 388,814		413,698 118,199 59,100 668,760 388,814		5.00% 5.00% 5.00% 5.00% 5.00% 5.00%	6
0.38	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Miligation 7 installation Tools Other Miscellaneous Printing Communications Office Supplies	Capital	All Other Departments	70.00% 20.00% 10.00% 43.00% 25.00% 15.00%	2.00% nder and CC 590,997 1 1	R costs			413698 118199 59100 668760 388814 233288					413,698 118,199 59,100 668,760 388,814 233,288		413,698 118,199 59,100 668,760 388,814 233,288		5.00% 5.00% 5.00% 5.00% 5.00% 5.00% 5.00%	6 6 6 6 6 6 6
0 38	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitigation / Installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles	Capital	All Other Departments	LS e range exte  70.00% 20.00% 10.00% 43.00% 25.00% 15.00% 10.00%	2.00% nder and CC 590,997 1 1	R costs			413698 118199 59100 668760 388814 233288 155526					413,698 118,199 59,100 668,760 388,814 233,288 155,526		413,698 118,199 59,100 668,760 388,814 233,288 155,526		5.00% 5.00% 5.00% 5.00% 5.00% 5.00% 5.00%	6 6 6 6 6 6
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1.00	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitigation / Installation Tools Other Miscellaneous Miscellaneous Miscellaneous Miscellaneous Office Supplies Personal Vehicles Postage Other	Capital les were ac Capital	All Other Departments	100% 100% 100% 100% 100% 1500% 1500% 1500% 100%	2.00% nder and CC 590,997 1 1 1 1,555,256 1 1 1 1 1	R costs			413698 118199 59100 668760 368814 233288 155526 77763 31105					413,698 118,199 59,100 668,760 388,614 233,288 155,526 77,763 31,105		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	66666666
1.00	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Milisgation 7 installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other	Capital les were ap  Capital	All Other Departments	LS e range externos e	2.00% nder and CC 590,997 1 1	R costs			413698 118199 59100 668760 388814 233288 155526 77763					413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	6 6 6 6 6 6 6 6 6 6
1.00	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitigation / Installation Tools Other Miscellaneous Miscellaneous Miscellaneous Miscellaneous Office Supplies Personal Vehicles Postage Other	Capital les were ac Capital	All Other Departments	100% 100% 100% 100% 100% 1500% 1500% 1500% 100%	2.00% nder and CC 590,997 1 1 1 1,555,256 1 1 1 1 1	R costs			413698 118199 59100 668760 368814 233288 155526 77763 31105					413,698 118,199 59,100 668,760 388,614 233,288 155,526 77,763 31,105		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	6 6 6 6 6 6 6 6 6 6
1.00	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitigation / Installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  ORM Optical Cables and Probes	Capital les were ac Capital	All Other Departments	100% 100% 100% 100% 100% 1500% 1500% 1500% 100%	2.00% nder and CC 590,997 1 1 1 1,555,256 1 1 1 1 1	R costs			413698 118199 59100 668760 368814 233288 155526 77763 31105					413,698 118,199 59,100 668,760 388,614 233,288 155,526 77,763 31,105		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	6 6 6 6 6 6 6 6 6 6
1.00	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Milingation / Installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  ORM Optical Cables and Probes  Material Adders	Capital nes were ap Capital	All Other Departments proximately 2% of the All Other Departments	LS range exter 70.00% 20.00% 10.00% 15.00% 15.00% 15.00% 15.00% EA	2.00% nder and CC 590,997 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R costs			413698 118199 59100 668760 388814 233288 155526 77763 31105					413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	6666666666
1.00	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitgathor / Installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  Other  Other  Ost.M  Optical Cables and Probes  Material Adders Sales Tax	Capital nes were ap Capital	All Other Departments	LS range extermination of the control of the contro	2.00% nder and CC 590,997 1 1 1 1.555,256 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R costs			413698 118199 59100 668760 368814 233288 155526 77763 31105					413,698 118,199 59,100 668,760 388,614 233,288 155,526 77,763 31,105		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	666666666666666666666666666666666666666
1.00 AMI	In addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Milingation / Installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  ORM Optical Cables and Probes  Material Adders Sales Tax Working Stock	Capital nes were ap  Capital	All Other Departments	LS range exter   70.00%   20.00%   10.00%   43.00%   25.00%   10.00%   2 00%   EA	2.00% nder and CC 590,997 1 1 1 1.555,256 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R costs			413698 118199 59100 668760 388814 233288 155526 77763 31105					413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		5 00% 5 00%	666666666666666666666666666666666666666
1.00 AMI	in addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitgathor / Installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  Obtail Optical Cables and Probes  Material Adders Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor)	Capital nes were ap Capital	All Other Departments	LS range extermination of the control of the contro	2.00% nder and CC 590,997 1 1 1 1.555,256 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R costs			413698 118199 59100 668760 388814 233288 155526 77763 31105					413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	666666666666666666666666666666666666666
0 38	in addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitigation 7 installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  ORM Optical Cables and Probes  Material Adders Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) 10.397,107	Capital es were ac capital	All Other Departments	LS range extermination of the control of the contro	2.00% nder and CC 590,997 1 1 1 1,555.256 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R costs			413698 118199 59100 668760 388814 233288 155526 77763 31105					413,688 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	666666666666666666666666666666666666666
0 38	in addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitgathor / Installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  Other  Osam Optical Cables and Probes  Material Adders Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) Sales Tax	Capital es were ac capital	All Other Departments	LS range extermination of the control of the contro	2.00% nder and CC   590,997   1   1,555,256   1   1   1   1   1   1   1   1   1	R costs			413698 118199 59100 688760 388141 233288 155526 77783 31105					413,698 118,199 59,100 668,760 399,814 233,288 155,526 77,763 31,105 15,000		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105 15,000		5 00% 5 00%	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
0 38 1.00 AMI	in addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Milingation 7 installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  O&M Optical Cables and Probes  Material Adders Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) Sales Tax Working Stock Working Stock Working Stock	Capital tes were ac Capital	All Other Departments	To Down 100% 1500%	2.00% nder and CC 590,997 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R costs			413698 118199 59100 668760 388814 233288 15552e 77763 31105 150.00					413.698 118.199 59,100 668,760 388.814 233,288 155,526 77,763 31,105 15,000		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105 15,000 10,397,107		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	666666666666666666666666666666666666666
0 38 1.00 AMI	in addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitgathor / Installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  Other  Other  Osam Optical Cables and Probes  Material Adders Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) Sales Tax Working Stock Stores Loading (Duke installs)	Capital es were ac capital	All Other Departments	LS range extermination of the control of the contro	2.00% nder and CC   590,997   1   1,555,256   1   1   1   1   1   1   1   1   1	R costs			413698 118199 59100 688760 388141 233288 155526 77783 31105					413,698 118,199 59,100 668,760 399,814 233,288 155,526 77,763 31,105 15,000		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105 15,000		5 00% 5 00%	666666666666666666666666666666666666666
0 38 1.00 AMI	in addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Milingation 7 installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  Other  Other  Material Adders  Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) Sales Tax Working Stock Stores Loading (Duke installs)	Capital tes were ac Capital	All Other Departments	PCT	2.00% nder and CC 590,997 1 1 1 1 1 1.555,256 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R costs			413698 118199 59100 668760 388814 233288 15552e 77763 31105 150.00					413.698 118.199 59,100 668,760 388.814 233,288 155,526 77,763 31,105 15,000 10,397,107		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105 15,000 10,397,107		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	666666666666666666666666666666666666666
1.00  1.00  AMI  AMI  CGR	in addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitigation / installation Tools Other  Miscellaneous Finning Communications Office Supplies Personal Vehicles Postage Other  OBM Optical Cables and Probes  Material Adders Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) Sales Tax Working Stock Stores Loading (note for AMI meters directly shipped to Contractor) Sales Tax Working Stock Stores Loading (Duke installs) 2,549,862 Sales Tax  Sales Tax Soles Tax	Capital tes were ac Capital	All Other Departments	70.00% 70.00% 10.00% 10.00% 43.00% 15.00% 15.00% 10.00% EA  PCT PCT PCT PCT PCT PCT PCT PCT PCT PC	2.00% 690,997 1 1 1,555,256 1 1 1 1 1,555,256 1 1 1 1 7 00% 7 00% 5,50% 1 1000%	R costs			413698 118199 59100 668760 398814 233288 15552 77763 31105 150 00 148530098 10548171 11286543 11907303 11907303					413,698 118,199 59,100 668,760 398,814 233,288 155,562 17,763 31,105 15,000 10,397,107 738,372 620,760 1,190,730 905,263		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105 15,000 10,397,107		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
1.00  1.00  AMI  AMI  CGR	in addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Mitigation / installation Tools Other  Miscellaneous Finning Communications Office Supplies Personal Vehicles Postage Other  OBM Optical Cables and Probes  Material Adders Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) Sales Tax Working Stock Stores Loading (note for AMI meters directly shipped to Contractor) Sales Tax Working Stock Stores Loading (Duke installs) 2,549,862 Sales Tax  Sales Tax Soles Tax	Capital tes were ac Capital	All Other Departments	PCT	2.00% nder and CC 590,997 1 1 1 1 1 1.555,256 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R costs			413698 118199 59100 668760 388814 233288 15552e 77763 31105 150.00					413.698 118.199 59,100 668,760 388.814 233,288 155,526 77,763 31,105 15,000 10,397,107		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105 15,000 10,397,107		5 00% 5 00%	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
AMI	in addition to power cords and brackets, other communications accessor Tools and Equipment Misc. field issue (meter boxes, anchor sockets, etc.) Milingation 7 installation Tools Other Miscellaneous Printing Communications Office Supplies Personal Vehicles Postage Other  Other  Other  Material Adders  Sales Tax Working Stock Stores Loading (none for AMI meters directly shipped to Contractor) Sales Tax Working Stock Stores Loading (Duke installs)	Capital res were ac Capital	All Other Departments	70.00% 70.00% 10.00% 10.00% 43.00% 15.00% 15.00% 10.00% EA  PCT PCT PCT PCT PCT PCT PCT PCT PCT PC	2.00% 690,997 1 1 1,555,256 1 1 1 1 1,555,256 1 1 1 1 7 00% 7 00% 5,50% 1 1000%	R costs			413698 118199 59100 668760 398814 233288 15552 77763 31105 150 00 148530098 10548171 11286543 11907303 11907303					413,698 118,199 59,100 668,760 398,814 233,288 155,562 17,763 31,105 15,000 10,397,107 738,372 620,760 1,190,730 905,263		413,698 118,199 59,100 668,760 388,814 233,288 155,526 77,763 31,105 15,000 10,397,107		5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00% 5 00%	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6

**EXHIBIT E** APPENDIX C

e [ ]	DUKE
	<b>ENERGY</b> ®

Grid Solutions Duke Energy Progress DEP AMR to AMI Deployment

Class 2 - (5% to 15%) COST ESTIMATE DETAIL

	Sales Tax Working Stock Stores Loading	Capital	All Other Departments		QTY	UNIT	RATE	UNIT	EQUIP UNIT	SUB	WORK HOURS	LABOR \$	MATERIAL \$	EQUIPMENT \$	SUBCONT. \$	TOTAL	Date - For Reference Only	Contingency Percentage	Amount
				PCT	7.00%				2500000					175,000		175,000		5 00%	8.7
	Stores Loading		All Other Departments	PCT	5.50%				2675000					147,125		147,125		5 00%	7.3
AAAI Mine C		Capital	All Other Departments	PCT	10 00%				2822125					282,213		282,213		5 00%	14,
AAAI Mine L	604,338																		
	Sales Tax		All Other Departments	PCT	7.00%				4458315					312,082		312,082		5 00%	15
	Working Stock		All Other Departments	PCT	5.50%				4770397					262,372		262,372		5 00%	
	Stores Loading	Capital	All Other Departments	PCT	10 00%				5032769					503,277		503,277		5.00%	25
	1,077,731																		
Comm Acc S	Sales Tax	Capital	All Other Departments	PCT	7.00%				1070370					74,926		74,926		5 00%	
V	Norking Stock	Capital	All Other Departments	PCT	5 50%				1145296					62,991		62,991		5.00%	
	Stores Loading	Capital	All Other Departments	PCT	10 00%				1208287					120,829		120,829		5.00%	
	258,746																		1
O&M S	Sales Tax	O&M	All Other Departments	PCT	7 00%				15000					1,050		1,050		5.00%	2.320
V	Working Stock		All Other Departments	PCT	5 50%				16050					883		883		5.00%	
s	Stores Loading 3.626	O&M	All Other Departments	PCT	10.00%				16933					1,693		1,693		5 00%	
								~											
				l															
· .	IOTE:		<u>}</u>		-		-	Ì							•				i
IA IA	pply Working Stock to materials that require it (see 'Material Loader Rate	s' for guida	ance)																1
	or Material / Equipment \$ - Estimated 'Stores Loading', 'Sales/Use Tax',			be included	in Columns	K-L also									1				
	or Subcontract / Services \$ - Estimated 'Escalation' should be included in																		1
	or Labor \$ - Fully burdened Labor \$ (with Fringe, Incentive, Payroll Tax,			e included i	n Column J	also													1
	or Labor \$ - Estimated 'Meals & Travel' dollars should summed into Colu			T	00.0111110										-		ì		
	stmating Contingency percentage should be entered in Column U.	., u us we	r																

# Class 2 - (5% to 15%) COST ESTIMATE DETAIL

	UKE NERGY®					AM	Grid Solu Ike Energy DEF R to AMI De	Progress eploymen									Issue Date: Revision No: IPRS No: Estimate No:	05/17/17 IPRS #317 Est #336
E	NERGY®						lass 2 - (5% ST ESTIMA		L									
/ork Flow Phase   Line Item WBS # / ID   Revision Task # / ID   Number		Capital O&M	/ IT&T/All Other Departments	UoM	UNIT QTY	WH UNIT	RATE	MATL UNIT	EQUIP UNIT	SUB UNIT	TOTAL WORK HOURS	LABOR \$	MATERIAL \$ EQUIPMEN	T \$ SUBCONT. \$	TOTAL	Spent to Date - For Reference Only	Contingency Percentage	Contingency Amount
Proj Support	Project Support Labor		·								382,727			1,812,326	<u>.                                      </u>	45,913	4.72%	1,536,88
	Project Management																	
	Internal Staff Augmentation	Capital Capital	All Other Departments All Other Departments	HRS HRS	98,120 36,784	1.00					98,120 36,784	7,949,541 2,177,792			7,949,541 2,177,792		5.00% 5.00%	397,47 108,89
	Field Services																	
	Internal	Capital	All Other Departments	HRS	194,555	1.00					194,555	17,643,942			17,643,942		5.00%	882,19
	Staff Augmentation	Capital	All Other Departments	HRS	20,720	1.00	55.00				20,720	1,139,600			1,139,600		5.00%	56,98
	Telecom																	
	Internal	Capital	IT&T	HRS	2,708	1.00					2,708	224,559			224,559		5.00%	11,22
	Staff Augmentation	Capital	IT&T	HRS		1.00											5.00%	
	Billing																	
	Internal	Capital	All Other Departments	HRS	11,720	1.00					11,720	877,430			877,430		5.00%	43,87
	Staff Augmentation	Capital	All Other Departments	HRS	18,120	1.00	40.00				18,120	724,800			724,800		5.00%	36,24
	Expenses																	
	Internal	Capital	All Other Departments	LS	1												5.00%	
	Staff Augmentation Internal	Capital Capital	All Other Departments IT&T	LS LS	1												5.00% 5.00%	-
	Staff Augmentation	Capital	IT&T	LS	1												5.00%	
	Escalation																	
	Internal Staff Augmentation	Capital Capital	All Other Departments  All Other Departments	LS LS	1					1521374.22 236901.25				1,521,374 236,901	1,521,374 236,901			
	Internal	Capital	IT&T	LS	1					8137.86				8,138	8,138			
	Staff Augmentation	Capital	IT&T	LS	1													
	Actuals																	
	Internal	Capital	All Other Departments	LS	1					28897.61				28,898	28,898	28,898		
	Staff Augmentation	Capital	All Other Departments	LS	1					17015.15				17,015	17,015	17,015		
	Internal	Capital	IT&T	LS	1													
	Staff Augmentation Expenses	Capital Capital	IT&T  All Other Departments	LS LS	1										-	-		-
	Expenses	Capital	IT&T	LS	1													
																		1
					_													-
	NOTE: Apply Working Stock to materials that require it (see For Material / Equipment \$ - Estimated 'Stores Loading Stores Load			d be include	ed in Column	ns K-L also												
	For Subcontract / Services \$ - Estimated 'Escalation'	should be included in Column	ns M also.															
	For Labor \$ - Fully burdened Labor \$ (with Fringe, Inc.			be included	d in Column	J also.												
	For Labor \$ - Estimated 'Meals & Travel' dollars show Estimating Contingency percentage should be entered	ila summed into Column J as	well.								ĺ							1

#### REDACTED

All data fields that are "blue" font, must be keyed in ma     In Column H, input "Unburdened" hourly rates, and ensinger	comes from the Title Block worksheet and to the Labor Lo annually. All other fields are formulas sure Column I properly calculates "Fully Burdened" rates fo of hours not permitted). FTE work hours calculations in	r "Internal" resources based on applicable					For Overtime situati	ons, add rows and adju	ust rates												
All data feelds that are "Exa" font, must be keyed in mi.     In Columne H, input "Unburdened" hourly rates, and ens accordingly.     In Columns P - BW, enter only whole hours (tractions	anually. All other fields are formulas. sure Column I properly calculates "Fully Burdened" rates fo	r "Internal" resources based on applicable					For Overtime situate	ons, add rows and adju	ust rates												
In Column H, input "Unburdened" hourly rates, and encountryl) In Columns P - BW, enter only whole hours (tractions) Role Role	sure Column I properly calculates "Fully Burdened" rates for						For Overtime situati	ons, add rows and adji	ust rates												
coordingly In Columns P - BW, enter only whole hours (fractions  Role							For Overtime situati	ons, add rows and adj	ust rates												
In Columns P - BW, enter only whole hours (fractions  Role	of hours not permitted). FTE work hours calculations in	Row 7 automatically adjust for company	holidays through 2020 (update Ho	oliday list sheet if your	r project extends beyond	1 20201			3												
Role	or nours not permitted). FIE work hours calculations in	Kow / automatically adjust for company	nosdays through 2020 (update He	shoay list sneet if your	r project extends beyond																
						,			1				[5 X	180	nk Hours in iii 184	fonth (adjusted	a for company :	160	160	168	160
														2616	2015	2016	7016	7515	1 2016	207	1 5377 1
															2010					-	<del></del>
		1	1	1				1						9	9	φ	9 €	9	9	2	4
	1	Labor Class	i	ı	IT&T/Telecom/All Other	Unburdened Wage	Fully Burdened	1 1		Estimated	Financial View	Total Estimated		=	ģ	( & '	ਹੈ ਹੈ	` 8	8	İ	1 4 '
	Job Family	[hugena Staff Anal Centrals]	Organization	Capital / O&M	Departments	Rate	Wage Rate	Estimated Hours	Estimated Labor \$	Expenses	Adder	Labor & Expenses	i	7	₹	1 0 '	0	2	0		, ii
	ood runniy	Training arrival Average	O I gonización		- Soparinona	7.000	\$ 81.02	98.120	7,949,541		<del>                                     </del>	7,949,541					<del></del>		<del> </del>	<del></del>	<del></del>
Sr. Project Manager		Internal Lator	Project Management	Capital	All Other Departments	\$ 63.08	\$ 105.69	8,080	853,980			853,980							1		
CIM Business Analyst		Internal Labor	Project Management	Capital	All Other Departments	\$ 46.59	\$ 73.06	7,960	621,370			621,370									
Field Services PM		Internal Labor	Project Management	Capital	All Other Departments	1 46 59 1	\$ 78.06	7,960 7,080	621,370 530,052			621,370 530,052				<u> </u>			ļ		i'
Communications Network		Internal Labor	Project Management	Capital	All Other Departments All Other Departments	\$ 44.68 \$ 44.68	S 74.87	4,720	353,368		<del>                                     </del>	353,368	_			<del></del>			+	<del></del>	+
Customer Engagement AMI Data		Internal Labor Internal Labor	Project Management Project Management	Capital Capital	All Other Departments				403.021	<del></del>	<del> </del>	403,021	-				<del></del>	·	-		
AMI Data Supervisor		Internal Labor	Project Management	Capital	All Other Departments	\$ 46.59	\$ 62.19 \$ 78.05	1 969	153 703			153.703					<del></del>				
Business Process Mgmt		Internal Labor	Project Management	Capital	All Other Departments	3 52 12	\$ 87.33	5,280	461,087			461,087		-							
Change Management		Internal Labor	Project Management	Capital	All Other Departments	\$ 52 12 \$ 33 17	S 87 33 S 55 58	6,392	558,195			558, 195									
AMI Operator (Engineering Tech II)		Internal Labor	Project Management	Capital	All Other Departments	\$ 33.17			73,361			73,361	<u> </u>	_ : T			+			-	<b>─</b>
EGIS Posting		Internal Labor	Project Management	Capital	All Other Departments	\$ 29.62	\$ 49.63	1,320	65,509			65,509 197,634				<del></del>	<del></del>		-		لسنسب
Meter Engineering Support		Internal Labor	Project Management Project Management	Capital Capital	All Other Departments All Other Departments	\$ 44.68 \$ 57.31	\$ 74.86 \$ 98.02	2,640 1,176	197,634 112,923		· · · · · · · · ·	112,923	0.20				<del></del>		<del></del>	+	+
Meter Lab Motor Route Analyst		Internal Labor	Project Management Project Management	Capital	All Other Departments				274,278		+	274,278	0.75			لنحصم	<del></del>	1	1 :		-
Meter Route Supervisor	1	internal Labor	Project Management	Capital	All Other Departments	\$ 5212		588	51,348			51,348	0 10					1			
Mitigation Manager		Internal Labor	Project Management	Capital	All Other Departments	\$ 52 12 \$ 46 59	\$ 78.06	5,920	462,124			462.124	1 00								
Project Execution Office		internal Labor	Project Management	Capital	All Other Departments	\$ 100.00	\$ 167.55	1,475	247,136			247,136	0.20	-					1		
System SME (AMI)		Internal Lebor	Project Management	Capitel	All Other Departments		\$ 78.06	588	45,900			45,900	0.10			<u> </u>					
Contractor Specialist		internal Labor	Project Management	Capital	All Other Departments	\$ 41.59			390,231 390,231		<u> </u>	390,231 390,231	1.00			لنصل			-		
Contractor Specialist		Internal Labor	Project Management Project Management	Capital	All Other Departments All Other Departments	\$ 41.59 \$ 41.59	\$ 69.68 \$ 69.68	5,600	390,231			390,231	1.00				<del></del>	-	_	<del></del>	
Contractor Specialist Project Director		Internal Labor	Project Management		All Other Departments	S 79.33	S 132.92	4,240	563.570			563,570		-			<del></del>	l	-	-	
CDO Manager		Internal Labor	Project Management	Capital	All Other Departments			1,722				128,919	0 25						-	-	
roject Management			Charles Constitution		CONTRACTOR STATE		\$ 69.20	36,784	2,177,792		200000000000000000000000000000000000000	2,177,792		•				•	•		-
Proj Controls Spec - Cost Analyst		Staff Augmentation Labor	Project Management	Capital	All Other Departments			1,944													
Maximo Support	Matenals Management	Staff Augmentation Labor	Project Management		All Other Departments						<u> </u>					اـــــا			-		لنب
Customer Engagement		Staff Augmentation Labor	Project Management	Capital	All Other Departments			5,360 5,360					<u> </u>			لنصب	<del></del>	-		+	ļ
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AMI Deployment Planner		Staff Augmentation Labor	Project Management	Capital	All Other Departments			5,360												-	
Scheduler		Staff Augmentation Labor	Project Management	Capital	All Other Departments			2.040					-								
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loid Services			Control of the contro		Company of the second		\$ 90,69	194,555	17,643,942			17,643,942		•					•		•
Distribution Service Tech	Field Mitigation	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 92.15	6,400	589,776			589,776					-				
Distribution Service Tech	Freid Mitigation	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 92.15	6,400	589,776 560,287			589,776 560,287	-						·	<del></del>	$\vdash$
Distribution Service Tech Distribution Service Tech	Field Megation Field Megation	Internal Labor Internal Labor	Field Services Field Services	Capital	All Other Departments All Other Departments	\$ 55.00	\$ 92.15 \$ 92.15	6,080	575,032		<del></del>	575.032				احنصم	<del></del>				<del></del>
Distribution Service Tech	Metering Support	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00 \$ 55.00	S 92.15	5,720	527.112		ļ	527.112					<u> </u>				
Distribution Service Tech	Metering Support	internal Labor	Field Services	Capital	All Other Departments			5,840	538,171			538,171									
Distribution Service Tech	Metering Support	Internal Labor	Field Services	Capitel	All Other Departments	\$ 55.00	\$ 92.15	4,880	449,704			449,704									
Distribution Service Tech	Metering Support	internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	S 92 15	6,000	552,915			552,915	L								<u> </u>
Distribution Service Tech	Metering Support	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00 \$ 55.00	\$ 92.15	5,680 5,560	523,426 512,368			523,426					<u> </u>		<u> </u>	<u> </u>	<b>ب</b>
Distribution Service Tech	Metering Support	Internal Labor	Field Services Field Services	Capital	All Other Departments All Other Departments	\$ 55.00	\$ 92.16 \$ 90.48	5,560 103,124	512,368 9,330,350			512,368 9,330,350	1				<u>'</u>	·	· · · · · ·		+
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Field RE Installation		Internal Labor	Field Services	Capital	All Other Departments	\$ 45.00	\$ 75.40	22,000	1.658.745			1,658,745	2 20				-				
Sockets (for A and K based meters)		Internal Labor	Field Services	Cepital	All Other Departments	\$ 45.00 \$ 89.37	\$ 149.73	3,866	578,864			578,864									
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eld Services		The second second	Automorphism and		Calculation of the Color	2.0	\$ 55.00	20,720	1,139,600	•		1,139,600					•	•		•	
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Ostribution Service Tech	Field Mitigation	Staff Augmentation Labor	Field Services	Capital	All Other Departments			5,320	-		· ·					$\rightarrow$	<del></del> '			<del> </del>	<del></del>
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2 All data fields that are "blue" font, must be keyed in manual.

3. In Column H, input "Unburdened" hourly rates, and ensere accordately.

4. In Columns P - BW, enter only whole hours (fractions of	160	184	152	160	176	160	168	176	160	176	176	169	168	178	152	A651 108	160	160	176	176	160	P160-C2	168	176	168	168	169	163
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APPENDIX C

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Renrament of SSN Network devices	·																		· · · · ·										<b></b>	
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Frand Total - All Labor Classifications	1 . 1	770	903	000	1.078	1,311	1,546	1,549	1,706	2,218	4,211	5,235	23.021	38,513	45,732	51,498	52.771	56,425	55,309	59.493	55,214	51.674	55.535	52.67	55.66	56,771	57,324	54,718	58,870	0 57,8

Labor Classification	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19
Internal Labor	_		145	14	5 1	26 9	91	90	90	124	124	46	49	49	49	41	81	81	49	49	49	49	49	49	49	49	49	49	45	45
Internal Labor		710	715	71:	5 8	72 1,14	1 1,216	1,219	1,216	1,374	2,271	3,149	5,015	6,551	7,219	8,349	8,438	_8,781	8,642	9,045	8,644	8,319	8,636	8,359	8,651	8,807	8,848	8,605	8,980	8,898
Internal Labor		-		-		-		-	-	-								-	-						-	-			-	
Internal Labor											-							-					-		-			-		
Staff Augmentation Labor		-	-			-			-	-															-				-	
Staff Augmentation Labor		48	48	4	8	80 8	240	240	400	720	1,560	1,880	1,880	1,800	1,800	1,800	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,120	2,120	2,160	2,160	2,160	2,160
Staff Augmentation Labor		-	-	-				1	-	-		-													-					
Staff Augmentation Labor								-		-	-	-							-							-				
Contractor Labor		-	-			-					-					-						-			-				-	
Contractor Labor				-		T .	T .	-			255	160	16,077	30,114	36,664	41,307	42,252	45,563	44,618	48,398	44,521	41,306	44,849	42,268	44,849	45,795	46,267	43,903	47,686	46,740
Contractor Labor Contractor Labor											-		-	-	-		-	-		-		-					-			
Contractor Labor														-						-		-	-	-					-	
Grand Total - All Labor Classifications		758	908	90	8 1,0	78 1,31	1,546	1,549	1,706	2,218	4,211	5,235	23,021	38,513	45,732	51,498	52,771	56,425	55,309	59,493	55,214	51,674	55,535	52,677	55,669	56,771	57,324	54,718	58,870	57,843

Labor \$ - Cash Flow by Month, by Organization	STATE OF THE	132,951	160,257	160,257	185,622	230,046	266,656	267,729	276,256	325,653	583,027	#VALUE!	#VALUET	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Project Management		66,476	67,280	67,280	81,538	82,342	100,647	101,184	105,447	127,269	190,601	245,042	246,587	246,353	247,664	246,821	246,587	248,741	244,667	248,507	245,900	244,433	253,653	251,265	251,499	253,653	253,419	251,890	253,185	253,887
Project Management		66,476	67,280	67,280	81,538	82,342	100,647	101,184	105,447	127,269	190,601	245,042	246,587	246,353	247,664	246,821	246,587	248,741	244,667	248,507	245,900	244,433	253,653	251,265	251,499	253,653	253,419	251,890	253,185	253,887
Field Services				-		25,655	25,655	25,655	25,655	25,655	65,046	78,778	246,145	382,203	441,708	531,979	550,962	578,757	570,774	602,095	569,638	542,765	553,628	531,912	563,914	575,582	581,645	561,908	593,352	585,460
Field Services					-	25,655	25,655	25,655	25,655	25,655	65,046	78,778	246,145	382,203	441,708	531,979	550,962	578,757	570,774	602,095	569,638	542,765	553,628	531,912	563,914	575,582	581,645	561,908	593,352	585,460
Telecom		-	12,848	12,848	11,273	7,026	7,026	7,026	7,026	9,902	9,902	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Telecom			12,848	12,848	11,273	7,026	7,026	7,026	7,026	9,902	9,902	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Contractor Services				-		-	-		-	-	33,550	31,800	315,526	565,550	682,208	776,643	793,748	853,685	836,580	904,938	834,763	776,593	883, 184	836,440	883,184	900,289	908,826	866,061	934,486	917,363
Riffing											18 379	31 179	43 157	43 157	43 157	43 157	43 157	43.157	43 157	43 157	43.157	43.157	43.157	43.157	43 157	43.157	43 157	43.157	43 157	43.157

*	remany of Labor S Cash Flow "by Year"
Project Management	
Project Management	
Field Services	
Field Services	
Telecom	
Telecom	
Contractor Services	
Biling	

Telecom	45	45	45	45	45	45	45	45	45	45	45	45	45	45	11	11	11	9	9	9	9	9			T			
Wiretess Architecture					-	1	1.	1.									-								-			
Data Network Architecture	_		<del> </del>	<del> </del>	+			1									-								+	+		
Cald Network Architecture		-		+			· -																					
Radio Engineering - EDX Modeling				4	4						- 4	- 4	- 2		- 1			,										
Radio Engineering - CGR Provisioning	. 24		24	24	1 24	24	24	24	24	24	24	74	- /4	24													-	
Grid Telecom Support - CGR Troubleshooting	3	3	3	3	3	3	3	3	3	3	3	3	3	3			L											
Radio Engineering - SSN Trouble-shooting	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4				-		
Cellular Activation	10	10	10	10	10	10	10	10	10	10	10	10	10	10	5	5	5	6	4	5	5	5				+		
Project Manager - Telecom	10		1	1 3	1 2	10	1 3	1 3		3		- 10	- 5	- 10			1 1								+		-	
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Contractor Services	45,795	48,157	43,903	42,957	47,886	46,940	50,723	52,614	47,496	52,899	53,820	51,486	49,619	44,950	35,147	11,789	240	240	240	240	240	240					-	
Account Manager	30	80	60	80	08	80	80	30	80	80	80	60	80	30	80	60	60	80	80	80	30	80	,					
Head End Specialist	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160						
Head End Specialist	160	160	160	160	160		160	160	160	160	160	180	160	160	160	160		.00			- 30	100			+	_		
Safety	576	606	553	541	601		637	861	211	160	100	100	100	160	100	100					· · · · · · · · · · · · · · · · · · ·		·		+	+		
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AMI Installation	44.817	47,151	42 959	42,016	45,685	45,751	49.486	51.353	46,685	52,287	53,220	50.886	49,019	44.350	34,547	11,189												
Retirement of SSN Network devices					200	200	200	200	200	200	200	200	200	200	200	200												
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Biling Analyst	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	86	80	80	40	40						
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Billing Analyst	160	160	160	160				160		160	160	160	160	160	160	160	160	80	40	40								
Billing Analyst	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	160	60	40		-							
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Billing Analyst - Lead	160	160	160	160	160	160	160	160	150	160	160	160	160	160	160	160	160	80								·		
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18D 18D 18D 18D	56,784									-	160	61,596	59,273	160	:				2,869	2,413	1,529	733						
TRID TRID TRID TRID TRID TRID TRID TRID	56,784	59,403	54,821	53,789	59,070	58,003	62,161	64,252	57,871	63,302	64,266	61,596	160 - - 59,273	160	42,526	17,551	4,251	3,529									-	
TRID TRID TRID TRID TRID TRID TRID Grand Total - All Labor Classifications	56,784	59,403	54,821	53,789	59,070	58,003	62,161	64,252	57,871	63,302	64,266	61,596	160 - - 59,273	160	42,526	17,551	4,251	3,529									•	-
TRID TRID TRID TRID TRID TRID TRID TRID	56,784	59,403	54,821	53,789	59,070	58,003	62,161	64,252	57,871	63,302	64,266	61,596	160 - - 59,273	160	42,526	17,551	4,251	3,529									-	-
TRID TRID TRID TRID TRID TRID TRID TRID	56,784	59,403	54,821	53,789	59,070	58,003	62,161	64,252	57,871	63,302	64,266	61,596	160 - - 59,273	160	42,526	17,551	4,251	3,529									-	
TRID TRID TRID TRID TRID TRID TRID TRID	56,784	59,403	54,821	53,789	59,070	58,003	62,161	64,252	57,871	63,302	64,266	61,596	160 - - 59,273	160	42,526	17,551	4,251	3,529							-		-	
TRID TRID TRID TRID TRID TRID TRID Grand Total - All Labor Classifications	56,784	59,403	54,821	53,789	59,070	58,003	62,161	64,252	57,871	63,302	64,266	61,596	160 - - 59,273	160	42,526	17,551	4,251	3,529					_		5		21	
TRID TRID TRID TRID TRID TRID TRID TRID	56,784	59,403	54,821	53,789	59,070	58,003	62,161	64,252	57,871	63,302	64,266	61,596	160 - - 59,273	160	42,526	17,551	4,251	3,529					_				421	- 3
180 180 180 180 180 180 180 180 180 180	56,784	59,403	54,821	53,789	59,070	58,003	62,161	64,252	57,871	63,302	64,266	61,596	160 - - 59,273	160	42,526	17,551	4,251	3,529							3ep-21		Vov.21	
TRID TRID TRID TRID TRID TRID TRID TRID	56,784	59,403	54,821	53,789	59,070	58,003	62,161	64,252	57,871	63,302	64,266	61,596	160 - - 59,273	160	42,526	17,551	4,251	3,529					_		Sep-21		Nov-21	Dec-21
180 180 180 180 180 Orand Yelsi - All Labor Classifications FFE's Per Month (Rounded Up) Labor Classification	56,784	59,403	54,821	53,789	59,070	58,003	62,161	84,252 366	57,871	63,302	64,266	61,596	160 - - 59,273	160	42,526	17,551	4,251	3,529	Mar-21				_		Sep-21	004-21	Nov.21	Dec-21
150 150 150 150 170 170 Grand Yolal - All Labor Classifications FFE's Per Month (Rounded Up) Labor Classification	\$6,784 \$55.3	59,403 59,403	54,821 361 )	53,789	59,070 336	58,003 363 263 45	62,161 974 07-June Wat-50	84,252 366	57,871 362 02-ke	63,302 366	160 		160 	190 	42,528 42,528 280 J	17,551 17,551	4,251	3,529 23,529	Mar-21	Apr-21	May-21	Jun-21	_		Sep-21	001:21	Nov.21	Dec-21
TEO TEO TEO TEO TEO TEO TEO TEO TEO TEO	56,784	59,403	54,821	53,789	59,070	58,003	62,161	64,252	57,871	63,302	64,266	567.50 567.50 567.50	160 - - 59,273	160	42,526	17,551	4,251	3,529					_		Sep-21	004-21	Nov-21	Dec-21
180 180 180 180 180 Tabl Tabl Farant Total - All Labor Classifications FTE's Per Month (Rounded Up) Labor Classification Informal Labor Informal Labor	\$6,784 \$55.3	59,403 59,403	54,821 361 )	53,789 53,789 337 50 50 60 60 60 60 60 60 60 60 60 60 60 60 60	59,070 336	58,003 363 263 45	62,161 974 07-June Wat-50	84,252 366	57,871 362 02-ke	63,302 366	160 		160 	190 	280 d 280 d 280 d	17,551 17,551	4,251	3,529 23,529	Mar-21	Apr-21	May-21	Jun-21	_		Sep-21	001:21	Nov.21	Dec.21
180 180 180 180 180 180 180 180 180 180	\$6,784 \$55.3	59,403 59,403	54,821 361 )	53,789 337 55 50 50 67 50 68,627	59,070 336	58,003 363 263 45	62,161 974 07-June Wat-50	84,252 366	57,871 362 02-ke	63,302 366	160 		160 	190 	42,528 42,528 280 J	17,551 17,551	4,251	3,529 23,529	27 W 9 2,380	Apr-21	May-21	Jun-21	_		Sep-21	001:21	Nov-21	Dec-21
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180 180 180 180 180 180 180 180 180 180	\$6,784 \$55.3	59,403 59,403	54,821 361 )	53,789 53,789 337 5 5 6 6 8,627	55,070 336 27- 45 8,980	58,003 363 20,24 45 6,858	62,161 974 07-June Wat-50	64,252 366 Q-15 45 9,433	57,871 362 02-ke	63,302 366	160 		160 	190 	280 d 280 d 280 d	17,551 17,551	4,251	3,529 23,529	27 W 9 2,380	Apr-21	May-21	Jun-21	_		Sep-21	001:21	Nov.21	Dec-21
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I ED	56,784 355 355 355 355 355 355 355 355 355 355	\$9,463 \$23 \$0 6 8 9,040 	54,821 361,352 52 45,8713 	53,789 337 337 34 45 8,627 	55,070 336 236 8,980 2,160	58,003 383 2,2 45 8,858 - 2,160	62,161 973 973 973 9733	64,252 366 Q-15 45 9,433	57,871 362 000 600 610 6169 	63,302 366 2,140 45 8,198 2,160	160 64,266 64,266 366 27 366	61,596 66,500 66,500 45 7,985	59,273 59,273 363 j Q Q Q 45 7,769 1,840	160         	42,528 280 280 00 11 6,168 	17,551 105 105 111 4,551	4,251 4,251 27) 4,251 280 11,200	3,525 23,525 24,540 	9 2,380 240	9 1,924 	9 1,120 - - 160	9 364 -	_		Sep-21	000.21	New21	Dec-21
TRO TRO TRO TRO TRO TRO TRO TRO TRO TRO	56,784 355 355 355 355 355 355 355 355 355 355	59,403 323 323 50 45 9,040	54,821 361 3 5 2 45 8,713 	53,789 337 337 45 8,627 	55,070 336 336 45 8,980 	58,003 363 363 363 45 45 8,858	62,161 973 973 973 9733	64,252 366 Q-15 45 9,433	57,871 57,871 362,9 02,4 6 W 45 8,169	63,302 63,302 366 20 45 8,198	160 64,266 64,266 366 27 366	61,596 067 07 45 7,985	160 59,273 353 353 45 7,769	53,467 53,467 394 395 7,032	42,526 280 d 280 d 2 0 d	17,551 105 105 111 4,551	4,251 4,251 27 28 111 2,800	3,529 3,529 23,640 9 2,640	9 2,380 	9 1,924	9 1,120	9 364 -	_		Sep-21	004:21	Nev21	Dec 21
TED TED TED TED TED TED TED TED TED TED	56,784 355 45 8,785 	59,403 323 5 5 6 9,040 2,160	54,821 54,821 381 5 6,713 	53,789 53,789 337 45 6,627 	55,070 336 8,980 	58,603 363 2,63 4,55 8,659 	62,161 62,161 62,161 62,161 62,161 62,161 63,161 64	64,252 64,252 64,353 65,433 7,450 7,160	57,871 57,871 562 602 603 603 603 603 603 603 603 603	02-unf 45 8,198 2,160	150 64,266 386 386 45 8,241 	61,596 61,596 7,986 	\$9,273 \$9,273 \$353 \$353 \$45 7,769 \$1,840	\$3,467 \$3,467 \$394 \$5 7,032 	42,528 280 J	17,551 105 20 0 11 4,551 1,200	4,251 4,251 77 5 5 11 2,800 	3,529 23 23 3 5 2,640 	9 2,380 240	9 1,924 - - 240	9 1,120 - - 160 -	9 364 - - 120	_		Sep-21	000.21	Nov.21	Dee-21
180 180 180 180 180 180 180 180 180 180	56,784 355 355 355 355 355 355 355 355 355 355	\$9,463 \$23 \$0 6 8 9,040 	54,821 361,352 52 45,8713 	53,789 337 337 34 45 8,627 	55,070 336 236 8,980 2,160	58,003 383 2,2 45 8,858 - 2,160	62,161 973 973 973 9733	64,252 366 Q-15 45 9,433	57,871 362 000 600 610 6169 	63,302 366 2,140 45 8,198 2,160	160 64,266 64,266 366 27 366	61,596 067 07 45 7,985	59,273 59,273 363 j Q Q Q 45 7,769 1,840	53,467 53,467 394 395 7,032	42,528 280 280 00 11 6,168 	17,551 105 105 111 4,551	4,251 4,251 77 5 5 11 2,800 	3,525 23,525 24,540 	9 2,380 240	9 1,924 	9 1,120 - - 160	9 364 -	_		Sep-21	004:21	New.21	Dee-21
TED TED TED TED TED TED TED TED TED TED	56,784 355 45 8,785 	59,403 323 5 5 6 9,040 2,160	54,821 54,821 381 5 6,713 	53,789 53,789 337 45 6,627 	55,070 336 8,980 	58,603 363 2,63 4,55 8,659 	62,161 62,161 62,161 62,161 62,161 62,161 63,161 64	64,252 64,252 64,353 65,433 7,450 7,160	57,871 57,871 562 602 603 603 603 603 603 603 603 603	02-unf 45 8,198 2,160	150 64,266 386 386 45 8,241 	61,596 61,596 7,986 	\$9,273 \$9,273 \$353 \$353 \$45 7,769 \$1,840	\$3,467 \$3,467 \$394 \$5 7,032 	42,528 280 J	17,551 105 20 0 11 4,551 1,200	4,251 4,251 27) 4,251 280 11,200	3,529 23 23 3 5 2,640 	9 2,380 	9 1,924 - - 240	9 1,120 - - 160 -	9 364 - - 120	_		Sep-21	004:21	Nov.21	Dec 21
180 180 180 180 180 180 180 180 180 180	56,784 355 45 8,785 	59,403 323 5 5 6 9,040 2,160	54,821 54,821 381 5 6,713 	53,789 53,789 337 45 6,627 	55,070 336 8,980 	58,603 363 2,63 4,55 8,659 	62,161 62,161 62,161 62,161 62,161 62,161 63,161 64	64,252 64,252 64,353 65,433 7,450 7,160	57,871 57,871 562 602 603 603 603 603 603 603 603 603	02-unf 45 8,198 2,160	150 64,266 386 386 45 8,241 	61,596 61,596 7,986 	\$9,273 \$9,273 \$353 \$353 \$45 7,769 \$1,840	\$3,467 \$3,467 \$394 \$5 7,032 	42,528 280 J	17,551 105 20 0 11 4,551 1,200	4,251 4,251 77 5 5 11 2,800 	3,529 23 23 3 5 2,640 	9 2,380 240	9 1,924 - - 240	9 1,120 - - 160 -	9 364 - - 120	_		Sep-21	004:21	New21	Dec-21
ISO TED TED TED TED TED TED TED TED TED TED	55,764 55,764 45 67 46 8,785 	59,403 323, 5 0 45 9,040 	54,821 54,821 381 3 45 6,713 	55,789 5337 20 45 6,627 2,160 	\$5,070 \$336 \$45 \$,980 \$2,180 \$47,885 \$47,885	58,003 58,003 363 45 8,850 	62,461 62,461 4574 45 9,233 2,160 	55,614	57,871  57,871  552.1  00 of the War of the	63,302 63,302 45 8,198 2,160 52,699	190 64,256 366 366 45 8,241 2,160	61,596 61,596 65 7,985 2,080 51,486	160 59,273 363 363 45 7,769 1,840 49,619	53,467 53,467 50 50 50 50 50 50 50 50 50 50 50 50 50	280 J 280 J 11 6,168 1,200	17,551 105 0 0 11 4,551 1,200 1,200	4,251 4,251 27 4,251 11 2,800 	3,529 3,529 4 5 2,640 	9 2,380	9 1,924 - - 240 - - 240	9 1,120 - - 160 - - 240	9 364 - - - - 120 - - - 240	12.180.	Aug-21	Sep 21	004:21	Nov.21	Dec 2:
180 180 180 180 180 180 180 180 180 180	56,784 355 45 8,785 	59,403 323 5 5 6 9,040 2,160	54,821 54,821 381 3 45 6,713 	55,789 5337 20 45 6,627 2,160 	\$5,070 \$336 \$45 \$,980 \$2,180 \$47,885 \$47,885	58,003 58,003 363 45 8,850 	62,461 62,461 4574 45 9,233 2,160 	84,252 87, 45 9,433 2,160 2,160 	57,871  57,871  552.1  00 of the War of the	63,302 63,302 45 8,198 2,160 52,699	190 64,256 366 366 45 8,241 2,160	61,596 61,596 65 7,985 2,080 51,486	160 59,273 363 363 45 7,769 1,840 49,619	53,467 53,467 50 50 50 50 50 50 50 50 50 50 50 50 50	280 J 280 J 11 6,168 1,200	17,551 105 0 0 11 4,551 1,200 1,200	4,251 4,251 27 4,251 11 2,800 	3,529 3,529 4 5 2,640 	9 2,380	9 1,924 - - 240 - - 240	9 1,120 - - 160 - - 240	9 364 120 240	12.180.	Aug-21	Sep 21	004:21	Nov.21	Dec-21
TED TED TED TED TED TED TED TED TED TED	55,764 55,764 45 67 46 8,785 	59,403 323, 5 0 45 9,040 	54,821 54,821 381 3 45 6,713 	55,789 5337 20 45 6,627 2,160 	\$5,070 \$336 \$45 \$,980 \$2,180 \$47,885 \$47,885	58,003 58,003 363 45 8,850 	62,461 62,461 4574 45 9,233 2,160 	55,614	57,871  57,871  552.1  00 of the War of the	63,302 63,302 45 8,198 2,160 52,699	190 64,256 366 366 45 8,241 2,160	61,596 61,596 65 7,985 2,080 51,486	160 59,273 363 363 45 7,769 1,840 49,619	53,467 53,467 50 50 50 50 50 50 50 50 50 50 50 50 50	280 J 280 J 11 6,168 1,200	17,551 105 0 0 11 4,551 1,200 1,200	4,251 4,251 27 4,251 11 2,800 	3,529 3,529 4 5 2,640 	9 2,380	9 1,924 - - 240 - - 240	9 1,120 - - 160 - - 240	9 364 - - - - 120 - - - 240	12.180.	Aug-21	Sep 21	004:21	Nov.21	Dec 21
ISO TROD TROD TROD TROD TROD TROD TROD TRO	55,784	55,463 523 5 6 9,040 	54,821	53,789 53,789 53,789 53,789	55,670 336 8 45 8,960 2,160 47,886	58,603 \$69,003 \$69,003 \$60,000 \$60,	62,161	84.252 366 4 45 9,433 2,160	57,871	63,302 63,302 63,302 63,302 63,302	160 64,256 366 1 366 1 45 8,241  2,160  53,820  64,256	61,596 61,596 45 7,985 - 2,080 - 51,486 61,596	160 59,273 1363 45 7,769 	53,467	42,528 280 280 11 11 6,168 6,168 1,200 	17,551	4,251	3,529	7 2 380 2 380 - 240 240 240 240 240 2,869	9 1,524	9 1,120	9 364 - - 120 - - 240 - - 733	12.180.	Aug-21	Sep 21	004:21	Nov.21	Dee 21
ISO TRO TRO TRO TRO TRO TRO TRO TRO TRO TR	55,784	55,463 523 5 6 9,040 	54,821	53,789 53,789 53,789 53,789	55,670 336 8 45 8,960 2,160 47,886	58,603 \$69,003 \$69,003 \$60,000 \$60,	62,161	84.252 366 4 45 9,433 2,160	57,871	63,302 63,302 63,302 63,302 63,302	160 64,256 366 1 366 1 45 8,241  2,160  53,820  64,256	61,596 61,596 45 7,985 - 2,080 - 51,486 61,596	160 59,273 1363 45 7,769 	53,467	42,528 280 280 11 11 6,168 6,168 1,200 	17,551	4,251	3,529	7 2 380 2 380 - 240 240 240 240 240 2,869	9 1,524	9 1,120	9 364 - - - - 120 - - - 240	12.180.	Aug-21	Sep-21	00431	Nov.21	Dec-21
TEO TEO TEO TEO TEO TEO TEO TEO TEO TEO	\$6,784 \$55,784 \$55,785 \$45,785 \$45,785 \$45,785	59,403 323 45 9,040 2,160 	54,821 561,821 361 J 2 45 6,713 	53,789 3337 45 8,627 2,160 42,957 42,957	\$5,870 \$336 \$\frac{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi}\}\chi_{\chi_{\chi\tiny{\chi_{\chi_{\chi}\chi_{\chi}\chi_{\chi_{\chi}\}\chi\tinm\chi_{\chi\tiny{\chi\tiny{\chi_{\chi\tiny{\chi_{\chi_{\chi_{\chi}\}\chi\tiny{\chi}\tiny{\chi}\tiny\tiny\tin_{\chi\tiny\tiny\tiny\tiny\tin\tiny\tiny\tiny	58,003 \$63 \$63 \$65 \$6,88 \$7,160	62,161 62,161 973 973 45 9,233 	64,252 366 3 5,433 9,433 2,160 52,614	57,871 57,871 57,871 57,871 87,496 57,871 87,496	63,302 65,302 65,302 45 6,198 2,160 52,899 63,302 2,851,830	160 64,266 366 1 2,160 2,160 53,820 64,266	61,596 61,596 2,060 	160 59,273 353 3 45 7,769 45,619 1,840 	1920 53,467 3943 80 0 45 7,032 1,440 1,400	42,528 11 6,168 1,200 1,35,147 1,882,378	17,351	11 2,800 1,201 1,200 1,201 1,200 1,201 1,2	3,529 23 23 24 2,640 2,640 240 240 240 3,529	9 2,380 240 240 2569 506,327	9 1,924	9 1,120	9 9 364 - - 120 - - 240 - - - - - - - - - - - - - - - - - - -	15-late	Aug-21	Sep-21	00431	Nov.21	Dec 21
ISO TRO TRO TRO TRO TRO TRO TRO TRO TRO TR	55,784 55,784 45 6,785 2,160 2,160 2,160 57,785 56,784	59,463 323 323 5 6 45 9,040 	54,821 361 361 361 45 6,713 2,160 43,903 54,821 8WALUE!	53,789 337 337 45 8,627 2,160 42,957 42,957 53,789	\$5,070 \$5,070 \$4,5 \$5,900 \$5,070 \$55,070	58,603 369 45 6,856 	62,161 974 974 973 9,233 9,233 9,233 9,245 9,233 9,246 9,247 9,248	64,252 366 1 366 1 45 9,433 2,160 2,160 64,252 8VALUE: 269,837	57,874 57,874 362 00 00 00 00 00 00 00 00 00 0	63,302 63,302 63,302 45 61,198 2,160 2,160 52,899 63,302 28,5603	160 64,286 366 ( 2 2 160 2 160 5 8,241 	61,596 61,596 45 7,985 	160 59,273 353 1 353 1 45 7.769 1.840  49,619  59,273 2,500,537 2,460,537	1920 53,467 53,467 3843 45 7,0322 - - - 1,1,440 44,950 - 53,467 191,938	42,528 280 11 6,168 1,200 2,35,147 42,528 1,882,378 161,849	17,551 105 11 4,551 1,200 11,789 11,789 1,774,673 165,400	4,251 4,251 27 11 2,800 1,200 2,40 2,40 4,251 4,251 4,274 93,153	3,529 23 23 2,640 2,640 3,529 3,529 3,529 3,530,466 93,153	9 2 360 9 2 360 	9 1,924 240 240 241 241 241 3 428,188 86,467	9 1,120 160 240 276,700 56,566	9 364 120 120 	Jan 21	Aug-21	Sep-21	00431	Nov.21	Dee-21
ISO TSD TSD TSD TSD TSD TSD TSD TSD TSD TSD	55,764 45 6,765 45,765 2,160 2,160 2,160 2,173 25,173 25,173	59,403 59,403 50 45 9,040 2,160 - - - 48,157 59,403 FVALUE: 254,496 254,496 254,496	54,821 361 J 2 2 45 6,713 	53,789 337 45 6827	\$5,67e	58,663 363 86 96 96 97 145,940 58,003 FVALUE: 267,215 267,215	62,161 971 972 45 9,233 2,160 	64.252 366 4 4 5 9,433 2,160 - - 52,514 64,252 89,837 269,837 269,837	57,871  57,871  60  60  60  60  60  60  60  60  60  6	63,302 63,302 86 45 6,198 2,160 52,899 63,302 2,851,830 29,803 29,803	160 64,256 64,256 45 8,241  2,160  53,820 64,256 64,256 2,675,256 259,603 259,603	61,596 61,596 65,7,985 7,985 2,080 51,486 61,596 261,385 261,385 261,385	160 59,273 353,1 45,679 45,619 49,619 2,500,537 2,40,575 2,40,575	1920 53,467 53,467 506 50 50 50 50 50 50 50 50 50 50 50 50 50	42,528 240 J 240 J 11 6,168 1,200 1,200 42,526 1,882,378 161,849 161,849	17,851 105 11 4,551 1,200 1,200 11,785 17,851 117,851 165,400	4,251 4,251 11 2,800 1,200 1,200 240 1,201 4,251 637,497 93,153 93,153	3,529 3,529 4,40 5,2,640 	\$ 2,360 2,360 240 240 240 240 240 250 240 240 240 240 240 240 240 240 240 24	9 1,924 	9 1,120	9 364 	12.197	Aug-21	12 deg	004-21	Nex-21	Dee-21
ISD TSD TSD TSD TSD TSD TSD TSD TSD TSD T	55,764 55,764 56,765 45, 67, 67,762 67,762 67,762 67,7762	59,403 59,403 45 9,040 - 2,160 - 48,157 - 48,157 - 59,403 #VALUE!	54,821 361 45 6,713 2,160 2,160 54,221 SMALEI	53,789 3337 45 8.627 2.160 2.160 42,957 53,789 87VALUE 287,215 267,215 267,215 255,210	\$5,976 \$45 \$45 \$,980 \$1,886 \$2,160 \$5,076 \$7,007 \$25,837 \$7,57,57 \$7,57,57	\$8,003 \$63 \$45 \$6,858 \$1,169 \$	62,161 62,161 973 45 9,233 2,160 2,160 50,723 	\$4,252 \$4,252 \$4,453 \$4,453 \$1,453 \$2,160 \$2,2160 \$4,252 \$4,252 \$4,252 \$4,252 \$4,252 \$4,252 \$4,252 \$4,252 \$4,552 \$	57,871  57,871  57,871  57,871  57,871	63,302 366 45 6,198 	160 64,286 366 ( 5 2) 45 8,241 	61,596 61,596 45 7,995 2,080 	160 59,273 353 45 7,769 45 1,840 	192 53,467 6 6 7,052 	42,528 289 J 111 6,168 1,200 1,200 42,526 1,882,378 161,649 161,649 40,089	17,551 105 11 14,551 1,200 11,789 11,786 1,74673 1,74673 165,400 165,400 120,797	4,251 4,251 11 2,800 1,200 1,200 1,200 1,200 1,300	3,529 3,529 3,529 3,529 3,529 3,529 53,153 161,358	9 2 360 240 240 240 240 240 240 240 240 240 24	9 1,924 240 240 240 2413 428,188 86,467 86,467 89,525	9 1,120 160 240 276,700 56,566 56,565 55,565	9 364 - - 120 - - - - - - - - - - - - - - - - - - -	Jan 21	Aug-21	Sep-21	00431	Nov.21	De-21
ISD TSD TSD TSD TSD TSD TSD TSD TSD TSD T	55,764 45 6,765 45,765 2,160 2,160 2,160 2,173 25,173 25,173	59,403 59,403 50 45 9,040 2,160 - - - 48,157 59,403 FVALUE: 254,496 254,496 254,496	54,821 361 J 2 2 45 6,713 	53,789 3337 45 8,627 2,160 2,160 42,957 53,789 87VALUE 287,215 267,215 267,215 255,210	\$5,976 \$45 \$45 \$,980 \$1,886 \$2,160 \$5,076 \$7,007 \$25,837 \$7,57,57 \$7,57,57	\$8,003 \$63 \$45 \$6,858 \$1,169 \$	62,161 62,161 973 45 9,233 2,160 2,160 50,723 	\$4,252 \$4,252 \$4,453 \$4,453 \$1,453 \$2,160 \$2,2160 \$4,252 \$4,252 \$4,252 \$4,252 \$4,252 \$4,252 \$4,252 \$4,252 \$4,552 \$	57,871  57,871  57,871  57,871  57,871	63,302 366 45 6,198 	160 64,286 366 ( 5 2) 45 8,241 	61,596 61,596 45 7,995 2,080 	160 59,273 353 45 7,769 45 1,840 	192 53,467 6 6 7,052 	42,528 289 J 111 6,168 1,200 1,200 42,526 1,882,378 161,649 161,649 40,089	17,551 105 11 14,551 1,200 11,789 11,786 1,74673 1,74673 165,400 165,400 120,797	4,251 4,251 11 2,800 1,200 1,200 1,200 1,200 1,300	3,529 3,529 3,529 3,529 3,529 3,529 53,153 161,358	9 2,360 240 240 240 240 240 240 240 240 240 24	9 1,924 240 240 240 2413 428,188 86,467 86,467 89,525	9 1,120 160 240 276,700 56,566 56,565 55,565	9 364 - - 120 - - - - - - - - - - - - - - - - - - -	12-140	Aug-21	Γ. Δ.	00421	Nex-21	Does 1
TED TED TED TED TED TED TED TED TED TED	55,764 55,764 45 6,785 45,785 2,160 2,160 2,1795 45,796 56,784 FMAUE 251,738 251,738 251,738 251,738 251,738	59,403 59,403 50 6 50 6 50 6 6 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	45 84 821 85 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	53,789 337 45 6,627 2,160 42,957 42,957 53,789 #VALUE: 257,215 555,016 555,016 555,016	\$5,676 \$356 \$45 \$6,680 \$2,160 \$7,886 \$5,070 \$55,877 \$75,070 \$74,057 \$74,057	\$5,003 363 45 6,556 2,150 46,940 55,003 55,003 55,003 55,003 55,003 55,003 55,003 55,003 55,003 55,003	62,161  62,161  62,161  62,161  63,61  63,61  62,161  50,733  62,161  50,733	64,252 64,252 45 9,453 	57,871  57,871  57,871  45  8,169  47,496  47,496  47,496  57,715  57,711  WALUE: 515,337 515,337	63,302 63,302 45 8,190 2,160 2,21	160 64,256 64,256 45 8,241  2,160  53,820       	61,596 61,596 45 7,985 2,080 2,080 51,485 61,596 2,587,383 516,985 555,942 555,942	160 59,273 \$69,273 \$69,273 \$69,273 \$60,273	192 53,467 53,467 506 50 50 50 50 50 50 50 50 50 50 50 50 50	42,528 280 J 11 6,168 1,200 1,200 1,200 42,526 1,882,378 1,882,378 40,698 40,698	17,851 105 11 4,551 1,200 1,200 1,785 11,786 11,786 11,786 11,746 11,786 11,746 11,786	4,251 11 2,800 1,200 1,200 240 240 240 251 (53) 351 (53) 351 (53) 351 (53) 351 (53) 351 (53) 371 (53)	3,529 23,3529 2,640 	9 2,360 240 240 240 25 2,869 27 94,850 129,014 129,014	9 1,924 240 240 2413 428,188 86,467 99,525 99,525	276,700 276,700 56,565 56,565 56,565 55,592 55,592	9 364 	12.197	Aug-21	12 deg	004-21	Nex-21	Dec 21
TEO TEO TEO TEO TEO TEO TEO TEO TEO TEO	\$6,764 \$353 \$6 \$755 \$755 \$755 \$6,785 \$755 \$757 \$21,733	59,403 59,403 45 9,040 2,160 	54,821 54,821 361 361 361 361 361 361 361 36	53,789 3397 5 45 8 627 2 160 42,957 53,789 87/ALUE! 87/ALUE! 554,016 554,016 554,016	55,070  55,070  55,070  45, 45, 65, 65, 65, 65, 65, 65, 65, 65, 65, 6	58,003 63 64 6 8,858 2,160 58,003 FVALUE: 566,165 566,165 566,165	\$2,161 \$234 \$23 \$23 \$23 \$2,160 \$50,723	54,252 84,252 8, 45 9, 45 9, 45 1, 2, 160 2, 160 52, 514 52, 514 52, 514 52, 514 52, 514 51, 52, 52, 52, 52, 52, 52, 52, 52, 52, 52	57,871  57,871  352.1  46  8,169  2,160  47,496  47,496  57,871  WALUE! 267,215 267,215 267,215 267,215 267,215 267,215	53,302 63,302 45 61,99 52,899 61,302 7,851,830 286,603 286,603 517,763 517,763	190 	51,596 45 7,985 	160 59,273 59,273 25,273 25,273 1,840 	1920 53,467 55,467 50 50 50 50 50 50 50 50 50 50 50 50 50	42,528 280 J 280 J 11 6,168 1,200 1,200 1,200 42,578 1,882,378 1616,459 40,659 40,659 40,659	17,851 108 11 1,000 11,789 11,789 11,74,673 11	4,251 11 2,800 1,200 1,200 2,40 4,251 4,251 1,755,8	3,529 5 6 2,640 	9 9 2,380 2 240 240 240 2 240 2 2,569 2 3 450 9 4 450 1 29,014 1 29,014 1 29,014 1 29,014	7 8 4 9 1.924 240	10.40.4  10.	9 364 120 240 240 30,351 30,351 11,058 11,058 7033	12-140	Aug-21	Γ. Δ.	00421	Nex-21	Dec 21
ISO TRO TRO TRO TRO TRO TRO TRO TRO TRO TR	55,764  55,764  45  47  45  47  45  47  45  47  45  47  47	59,403 523 50 45 9,040 45,57 48,157 48,157 59,403 8VALUE: 8VALUE: 8VALUE: 8VALUE: 8VALUE:	54,821 55,821 45 6,713 43,903 43,903 54,821 8VALUE: 8VALUE	53,789 337 45 45 8,627 2,160	\$5,070 \$35,070 \$35,070 \$35,070 \$35,070 \$374,005	58,003 369 45 6,858 2,160 2,160 46,940 55,003 57,215 560,105 57,215 560,105 87,4LUE	62,161 974 45 9,233 45 9,233 2,160 - - - - - - - - - - - - -	\$64,252 \$64,252 \$64,252 \$7,453 \$1,453 \$1,453 \$2,614 \$2,614 \$2,2614 \$2,2614 \$2,2614 \$3,2614 \$4,252 \$4,252 \$61,369,837 \$61	57,874  57,874  562,  45  8,169  47,496  47,496  47,496  57,271  8VALUE: 8VALUE: 8VALUE: 8VALUE: 8VALUE:	63,302 63,302 45 8,199 63,302 2,551,830 63,302	190 	8 45 7,985 2,080 2,080 2,080 2,185 3,285 3,285 3,785 3	160 59,273 353,4 353,4 45,7,769 1,840 49,619 49,619 49,619 2,500,537 246,575 246,575 493,906 493,906 493,906 3,763	192 53,467 53,467 50 50 50 50 50 50 50 50 50 50 50 50 50	42,526 269 111 6,168 1,200 1,200 1,200 1,822,378 1,882,378 161,849 400,659 659 659	17,551 105 11 4,551 1,200 1,200 1,200 1,7,551 1,746,673 1,6540 165,400	4,251 4,251 11 2,800 1,200 1,200 1,200 240 4,251 4,251 63,153 178,858 178,858 178,858	3,529 23. 24. 3 2,640 	9 9 2 350 2 3 50 2 3 50 52 7 5 54 550 129 014	9 1,524	9 1,120	9 364	12-100	Aug-21	Γ. Δ.	00421	Nex-21	Dec 21
TEO TEO TEO TEO TEO TEO TEO TEO TEO TEO	56,764  255,355  45,355  45,355  2,160  2,160  2,160  2,173  251,733  577,782	59,463 59,463 9,04 9,	54,821 54,821 25 26 45 6,713 	53,789 339 45 627 2.160 42,957 53,789 87,215 554,016 554,	\$5,070 \$356. \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	\$5,003 363 45 6,689 -2,160 55,603 \$7,215 566,105 566,1	\$2,161 \$2,161 \$2,161 \$2,23 \$2,23 \$2,160 \$2,160 \$2,161 \$2,160 \$2,762 \$2,7	52,614 52,614 52,614 52,614 54,252	57,871  55,871  55,871  45  8,169  47,496  47,496  57,871  FYALUE  57,275  57,271  FYALUE  57,275  57,271	63,302 63,302 45 8,196 2,160 2,160 2,289 2,289 2,289,603 299,603 299,603	190 190 190 190 190 190 190 190	51,586 25,7985 45,7985 7,985 51,486 51,486 51,586 221,383 221,383 221,385 256,942 558,942 37,633 37,633	160 59,273 1363 1363 45 7,769 	192 53,467 394 3 5 6 7,032 1,440 1,440 1,440 1,440 1,440 1,950 1,9	42,528 280 J 11 6.168 1,200 1,200 1,200 1,822,378 1,882,378 161,849 400,695 400,695 400,695 655 772,009	17,551 105 105 1,105 1,200 1,200 11,789 11,789 11,785 11,74,673 165,400 165,400 165,400 250,797 250,79	4,251 4,251 11 27 11 2,800 2,800 2,000 1,20	3,529 3,529 5 4 2,640 2,640 2,640 2,40 2,40 3,529 3,153 93,153 93,153 93,153 161,358 161,358 161,358 161,358 161,358	9 2,380 2,380 240 240 2,40 2,40 2,40 2,40 2,40 1,20 1,20 1,20 1,20 1,20 1,20 1,20 1,2	7 8 4 9 1.924	10.1 10.1 10.1 10.1 10.1 10.1 10.1 10.1	9 364	12-140	Aug-21	Γ. Δ.	00421	Nex-21	Dee 21
ISO TRO TRO TRO TRO TRO TRO TRO TRO TRO TR	55,764  55,764  45  47  45  47  45  47  45  47  45  47  47	59,403 523 50 45 9,040 45,57 48,157 48,157 59,403 8VALUE: 8VALUE: 8VALUE: 8VALUE: 8VALUE:	54,821 55,821 45 6,713 43,903 43,903 54,821 8VALUE: 8VALUE	53,789 339 45 627 2.160 42,957 53,789 87,215 554,016 554,	\$5,070 \$356. \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	\$5,003 369 45 6,659 2,160 55,603 \$5,6	62,161 974 45 9,233 45 9,233 2,160 - - - - - - - - - - - - -	52,614 52,614 52,614 52,614 54,252	57,874  57,874  562,  45  8,169  47,496  47,496  47,496  57,271  8VALUE: 8VALUE: 8VALUE: 8VALUE: 8VALUE:	63,302 63,302 45 8,199 63,302 2,551,830 63,302	190 	8 45 7,985 2,080 2,080 2,080 2,185 3,285 3,285 3,785 3	160 59,273 353,4 353,4 45,7,769 1,840 49,619 49,619 49,619 2,500,537 246,575 246,575 493,906 493,906 493,906 3,763	192 53,467 53,467 50 50 50 50 50 50 50 50 50 50 50 50 50	42,526 269 111 6,168 1,200 1,200 1,200 1,822,378 1,882,378 161,849 400,659 659 659	17,551 105 11 4,551 1,200 1,200 1,200 1,7,551 1,746,673 1,6540 165,400	4,251 4,251 11 2,800 1,200 1,200 1,200 240 4,251 4,251 63,153 178,858 178,858 178,858	3,529 23. 24. 3 2,640 	9 9 2 350 2 3 50 2 3 50 52 7 5 54 550 129 014	9 1,524	9 1,120	9 364	12-100	Aug-21	Γ. Δ.	00421	Nex-21	Dec 21

	Summary of Labor \$ Cash flow "by Year"
Project Management	
Project Management	
Field Services	
Field Services	
Telecom	
Telecom	
Contractor Services	
Billing	
Grand Total - All Lab	r Classifications

#### Labor Burden Rates and Factors Assumptions

Internal Labor Loaders Factor (Unburdened)	1.00		Basis of Estimated Rates Used
Fringe	0 21	21 08%	Type basis of rate charce here (defaulted to "Service Company rate - may need to be higher/lower based on project jurisdiction, and/or actuals guidance from Finance.
Incentive	0 1 1	10.50%	Type basis of rate choice here (deraulted to standard assumption from Finance in Jan 2014 - may need to be higher/lower based on attuals guidance from Finance.)
Payroll Tax	0 10	7 65%	Type uses of rate those here contained to standard assumption from Finance in Jan 2014 - may nined to be higher/lower based on actively guidance from Finance,
Serv Co Loader	0.25	25 32%	Type basis of rate choice here rasfaulted to "Service Company, actuals rate - may need to be higher/lower based on new goldence from Finance,
Internal Labor Loaders Factor (Burdened)	1.07		
n towards to him or a simple result of the company			Rates' fab to assess project for proper burdens!
Internal Labor Loaders Factor (Unburdened)	1.00	e rend counte L	Basis of Estimated Rates Used
Fringe	0.15	14 92%	point or commerce region to the property of the property of the past of the choice here (defaulted to DE Flonds' rate - may need to be higher/lower based on project suitable or activate quidence from Finance.
Incentive	0.13	10.50%	Type basis of rate choice here (defaulted to standard assumption from Finance in Jan 2014 - may need to be higher/lover based on any sometime and advantaged to standard assumption from Finance in Jan 2014 - may need to be higher/lover based on actuals guidence from Finance.
Payroll Tax	0.11	7 65%	Type basis of rate choice have restricted to statistic desamption from Finance in an 2014 - may need to be imperiouse to actuate guidance from Finance.  Type basis of rate choice have restained to statistic desamption from Finance in Jan 2014 - may need to be imperiouse passed in adulate suddence from Finance.
Utility Loader	0.45	45 00%	Type uses of rate choice have costauled to file planning rate for Cunsortinal Utility resource - may need to be ingheriowal based on advance from Financia;  Type uses of rate choice have costauled to file planning rate for Cunsortinal Utility resource - may need to be ingheriowal based on new quidance from Financia;
Internal Labor Loaders Factor (Burdened)	9.09	45 00%	Type basis or rare more mer merebused to the planning test for clanes original Using Testance - may need to be higher lower based on new guidance from Finance;
	2000		
GTHSR Geney Greatures (Allalian Actious or Internal Ho	urly Rate Factor (se	e tabor Loader F	Dates' lab to assass project for proper burdens)
Internal Labor Loaders Factor (Unburdened)	1.00		Basis of Estimated Rates Used
Fringe	0.15	14.92%	Type hass of rete choice here (dufavilled to 'DE Florida' rate - may need to be higher/lower based on project jurisdiction, and/or actuals guidance from Finance;
Incentive	0.11	10 50%	Expertasss of rate choice here (distuited to standard assumption from Finance in Jan 2014 - may need to be higher/rewer based on actuals guidance from Finance).
Payroll Tax	0.10	7 65%	Type basis of rate choice here (detaulted to standard assumption from Finance in Jan 2014 - may need to be higher/lower based on actuals guidence from Finance)
Affilitate Loader	0.55	55 00%	Type basis of rate choice frere (defaulted to 'Affiliate Loader' rate - may need to be higher/lower based on actuals or guidance from Finance)
Internal Labor Loaders Factor (Burdened)	9.00		
title modewaannestit ann an eine on the contribution and a con-	THE REAL PROPERTY.		



Itron Professional Services

Account Manager

Head End Specialist

Head End Specialist

Head End Specialist

Head End Specialist

Flaggers, Vegetation Management, Police protection
Added 5% contingency for future rate discussions

Includes \$0.91 is for recycling
Added 5% contingency for future rate discussions

Retirement of SSN Network devices

Account Manager

Meter Installation

Itron Travel

DESCRIPTION

For Labor \$ - Estimated 'Meals & Travel' dollars should summed into Column J as well.

Estimating Contingency percentage should be entered in Column U.

Line Item Revision

WBS#/ID

Task#/ID

6670.00

6670.00

REDACTED

IT&T/All Other

Departments

All Other Departments
All Other Departments

All Other Departments

Ali Other Departments

All Other Departments

All Other Departments

All Other Departments

Capital

Capital

Capital

Apply Working Stock to materials that require it (see "Material Loader Rates' for guidance)
For Material / Equipment 5 - Estimated Stores Loading. Sales/Use Tax, "Freight, and Escalation' should be included in Columns K-L also
For Subcontract / Services 8 - Estimated Escalation' should be included in Columns M also For Subcontract / Services \$ - Estimated 'Escalation' should be included in Columns M also.

For Labor \$ - Fully burdened Labor \$ (with Fringe, Incentive, Payroll Tax, Loader, and Escalation) should be included in Column J also.

**Grid Solutions Duke Energy Progress** 

MATL

EQUIP

SUB UNIT

1750.00

WORK

HOURS

2,880 6,240 3,840

13,723

1,452,132

2,400

617,535

240,000

LABOR \$ MATERIAL \$ EQUIPMENT \$ SUBCONT. \$

TOTAL

175,000

262,500 262,500

DED AMR to AMI Deployment

45.00

100.00

WH

UNIT

2,880 6,240 3,840

150

13,723

1,452,132

2,400

UoM

Hrs Hrs Hrs

Ea Ea Ea

Hrs

Hrs

Ea

Class 2 - (5% to 15%) COST ESTIMATE DETAIL

		Estimate No:	ESI #336
OTAL	Spent to Date - For Reference Only	Contingency Percentage	Contingency Amount
9,896,078	389.06	10.49%	3,135,918
175,000			
262,500			
262,500			
617,535		5.00%	30.877
		12.00%	
240,000		5 00%	12,000

Issue Date:

Revision No: IPRS No: 05/17/17

IPRS #317

DUKE ENERGY®

Class 2 - (5% to 15%)
COST ESTIMATE DETAIL

Work Flow Phase Line Item	n										TOTAL					Spent to		·
WBS # / ID Revision		Capital	/ IT&T/All Other		UNIT	WH		MATL	EQUIP	SUB	WORK					Date - For	Contingency	Contingency
Task # / ID Number	DESCRIPTION	O&M	Departments	UoM	QTY		RATE	UNIT	UNIT	UNIT	HOURS	LABOR \$	MATERIAL \$ EQUIPMENT \$	SUBCONT. \$	TOTAL	Reference Only	Percentage	Amount
OH ALLOC	Grid Solutions Overhead Allocated Costs										61,700,163	2,471,519			2,471,519	3,513	4.99%	123,40
																		1
	Grid Solutions POOL Allocation	Capital	All Other Departments	PCT	61,700,162	1.00	0.04					2,468,006			2,468,006		5.00%	123,400
											-							<del> </del>
																		1
	Actuals	Capital	All Other Departments	LS	1	1.00	3512.63					3,513			3,513	3,513		
																		1
																		<del>                                     </del>
																		<del>                                     </del>
	NOTE:																	1
	GS Pool Allocation rate is based on curent GS Finance guidance.																	
	GS Pool Allocation is applied to total labor cost (Internal, Staff Augmen																	
	OH Allocation should be entered as Labor to ensure it is properly reflect	cted on the	Summaries.															·

Issue Date:

IPRS No:

Revision No:

Estimate No:



Class 2 - (5% to 15%) COST ESTIMATE DETAIL

DUKE ENERGY®

Work Flow Phase	Line Item										TOTAL						Spent to		
WBS#/ID	Revision	Capital/	IT&T/All Other		UNIT	WH		MATL	EQUIP	SUB	WORK						Date - For	Contingency	Contingency
Task # / ID	Number DESCRIPTION	O&M	Departments	UoM	QTY	UNIT	RATE	UNIT	UNIT	UNIT	HOURS	LABOR \$	MATERIAL \$ E	QUIPMENT \$	SUBCONT. \$	TOTAL	Reference Only	Percentage	Amount
RISK EMV	Risk EMV Contingency													3,670,524		3,670,524			
Risk ID																			
18	Communications Equipment Requirements Exceed Plan	Capital	All Other Departments	LS	1				878823.00					878,823		878,823			1
16	Installation Vendor Underbid	Capital	All Other Departments	LS	1				716926.00					716,926		716,926			1
12	Installation Vendor Pricing Bid is not similar to Indiana RFQ	Capital	All Other Departments	LS	1				318634.00					318,634		318,634			1
26	Customer Meter Location Inaccuracies	Capital	All Other Departments	LS	1				289560.00					289,560		289,560			1
19	Increase in Required 4G Cellular (Direct Connect) Meters	Capital	All Other Departments	LS	1				261375.00					261,375		261,375			
1	Resource Constraint (Meter Installation Vendors)	Capital	All Other Departments	LS	1				159317.00					159,317		159,317			
23	Delay in CIM to MDM Project	Capital	All Other Departments	LS	1				158400.00					158,400		158,400			1
6	Resource Constraint (Availability of Skilled Mitigation Resources)	Capital	All Other Departments	LS	1				155925.00					155,925		155,925			1
13	Non-scalable Range Extender for Pads (Processes & Permissions)	Capital	All Other Departments	LS	1				123077.00					123,077		123,077			1
20	Can't Locate Duke Owned Pole for Communications Devices	Capital	All Other Departments	LS	1				123077.00					123,077		123,077			
	Risk register delta	Capital	All Other Departments	LS	1				485410.00					485,410		485,410			
	Total 'Risk EMV' should be detailed under Columns J-M.																		
	IMPORTANT:																		
	If amount of highest single triggered-risk item on Risk Register is high	ner (than sum	of 'Risk EMV' list) use t	that amoun	t here inste	ad.													1

- REDACTED

  User Notes:

  1. This worksheet is not linked to any other worksheet, except for the date information which comes from the Title Block worksheet.

  2. All data fields that are "blue" fort, must be keyed in manually. All other fields are formulas.

  3. Please determine your Cash Flow Categories in such a way as you would like to report out for your project. These are user defined fields.

  4. Formulas in cells H26/M36 are "Array" formulas. Please do not edit unless you have a good understanding of Array formulas.

					2516	2046	/615	2016	3610	2016	2617	2037	2017	2017	2017	2017	2017	2017	2017	2017	2017	200	2018
Cash Flow Categories	Cost Category	Capital / O&M	IT/Telecom/All Other Departments	Total	Jul.16	Aug-16	Sep-16	94:16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18
Itran Meters	Materiars & Mat Burdens	Capital	All Other Departments											-						-		The state of the s	Jan Sec. 18
Connected and Routers (CGR)	Materials & Mat Burdens	Capital	All Other Departments						-				-										
Range Extenders (RFRE)	Matenals & Mat Burdens	Capital	All Other Departments		7		-																
	internal Labor	Capitai	All Other Departments			-		1	-	-													
Project Management	Internal Labor	Capital	All Other Departments	7,978,455	6,988	7,766	8 348	4,729		446				57,556	57,944	57,944	70 648	71.037	77.130	77,389	77,130	89,963	131 25
Project Management	Staff Augmentation Labor	Capital	All Other Departments	2,194,807	8 503	7,097	4,641	1,774						2,842	2.842	2,842	4,736	4.736	14 209	14,209	23.682	42 628	61.57
Field Services	internal Labor	Capital	All Other Departments	17,643,942				-							-			23.942	23.942	23,942	23.942	23 942	44.56
Field Services	Staff Augmentation Labor	Capital	All Other Departments	1,139,600	2						-												19 80
Telecom	internal Labor	Capital	Telecom	224,559											12 024	12.024	10,448	7 463	7 463	7 463	7 463	10 283	10.28
Telecom	Staff Augmentation Labor	Capital	Telecom	·		3				-													
Contractor Services	Contractor Labor	Capital	All Other Departments	29, 196,068	2,275	(745	(1,539	~		•													5.03
Billing	Internal Labor	Capital	All Other Departments	724,800			-	-			,												6.40
Billing	Staff Augmentation Labor	Capitai	All Other Departments	877,430				,	•	•			•								· · ·		1197
Escalation	Other	Capital	All Other Departments	- 1									-										
internal	internal Labor	Capital	All Other Departments	1,521,374										· ·									5.10
Staff Augmentation	Staff Augmentation Labor	Copital	All Other Departments	236,901			Carlana e													-			2,61
Internal	internal Labor	Capital	Telecom	8,138	300	-																	28
Staff Augmentation	Staff Augmentation Labor	Capital	Telecom																				
Expenses	Meats/Travel/Lodging/Fleet	Capital	All Other Departments																-				
Expenses	Meals/Trevel/Lodging/Fleet	Capitei	Telecom			-			•							,							
tron Travel	Meals/Travel/Lodging/Fleet	Capital	All Other Departments	700,000							•												9.72
Optical Cables and Probes	Matenais & Mat Burdens	M&O	All Other Departments	18,626	188																		
Risk EMV & Contingency - Estimate Uncertainty	Contingency	Capital	All Other Departments	15,188,003			-						-									500 000	
Gnd Solutions PCOL Allocation	PMO (Allocation)	Capital	All Other Departments	2,471,519	1,151	882	731	724		25				2.416	2,912	2,912	3 433	4.287	4,910	4,920	5,289	6.673	11.95
and Solutions POOL Allocation	PMO (Allocation)	O&M	All Other Departments			-	-	•			150000000						-						
Grand Total - All Cash Flow Categories			<del></del>	278,162,481	13,916	15,020	12,790	7,227		471				62,813	75,723	75,723	89,266	759,377	775 565	775,834	785 416	1 321 300	337,764
riana rotar-An Cash riow Categories	1	1	1	270,102,401																			

PRS Format																						
Cost Category	Capital / O&M	IT&T / Business (All Other Departments)	Total	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18
		1																				
Internal Labor	Capital	IT&T	232,697						-					12,024	12,024	10,448	7,463	7,463	7,463	7,463	10,283	10,5
	Capital	All Other Departments	27,868,571	6,988	7,786	8,948	4,729	-	446		-	-	57,556	57,944	57,944	70,648	94,979	101,071	101,331	101,071	113,905	187,3
	O&M	IT&T		· ·	-		-		-									-			-	
	O&M	All Other Departments					-					-										
Staff Augmentation Labor	Capital	IT&T		T	·			-		-		-		-	-						-	
	Capital	All Other Departments	4,448,738	3,503	7.097	4,641	1,774						2,842	2,842	2,842	4,736	4,736	14,209	14,209	23,682	42,628	95,9
	O&M	IT&T							-		-					-				-	-	
	O&M	All Other Departments						-	-							-		-				
Contractor Labor	Capital	IT&T							-							-	-	-				
	Capital	All Other Departments	29,196,068	2,275	(746)	(1,529)																5,0
	O&M	IT&T	-						-							-					-	
	O&M	All Other Departments																				
Materials & Mat Burdens	Capital	IT&T		-	-			-		-	-	-					-					
	Capital	All Other Departments	198,038,259	-	-								-				647,911	647,911	647,911	647,911	647,911	17,20
	O&M	IT&T					-										-	-				
	O&M	All Other Departments	18,626	-	-		-	-									-	-			-	
Meals/Travel/Lodging/Fleet	Capital		700,000								-		-				-	-		· · · · · ·		9,7
	O&M	1				-	-	-												-		
Other	Capital	IT&T								-	- ·						-					
	Capital	All Other Departments		-			-		· .	-	-						-			-	-	
	O&M	IT&T			-		-		-			,										-
	O&M	All Other Departments				-									-	-	-	-			-	
Contingency	Capital		15,188,003	-	-		-	-		-			-	-							500,000	
	O&M			1			-	-				-				-	-			-		-
PMO (Allocation)	Capital	All Other Departments	2,471,519	1,151	882	731	724		25			-	2,416	2,912	2,912	3,433	4,287	4,910	4,920	5,289	6,673	11,9
	O&M	All Other Departments									-	-		-	-	-						-
PMO (Allocation)	Capital	IT&T			-				-			-	-	-								
	O&M	IT&T										-	-	-	-	-		-		-	-	
AFUDC	Capital				-	-		-	-		-	-				-				-		
		T																				
RS Grand Total			278,162,481	13,916	15,020	12,790	7,227		471				62.813	75,723	75,723	89,266	759,377	775,565	775,834	785,416	1,321,399	337.7

#### APPENDIX C

## **REDACTED**

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Ho   15   161-05   162-27   162-27   162-27   162-27   161-27	Feb-18	Mar-18	Apr-18	May-18	Jun-18	81-140	Aug-18	Sep-18	86:38	Nov-18	Dec-18	Jan-19	Feb 19	Mar-19	Apr-19	May-19	Jun-19	19-اس	Aug-19	Sep-19	Od:19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
99.01   191806   19																															-ta-	
61572 61573																		·														
9804 211000 15900 15900 15900 15900 15900 15900 5090 509																																195 (
1980   1980																																47 6
346 4093 4093 4093 4093 300 6.77 4091 4093 4093 4093 4093 4093 4093 4093 4093																																35.2
194 1952 19497 17264 1940 1950 1950 1950 1950 1950 1950 1950 195																																3.7
19200 19200	- 30.5		1003	4,005	3400	W/11/	0717	4 000	4,000	1025	400	4,000			4007		4,003	3.72		3732	7.7.		3734	3732	5132	31,4	3737	77.5	7.7	3.3		<del></del>
9900 19200 1	3 154	316 892	593 572	722.684	814,204	632 833	898 064	879.465	ú53.976	877 547	814 182	884,022	833 146	864 022	902 651	911,964	865,373	939 926	921,278	502 651	949 220	865 373	846 725	\$43,868	925 220	939 764	1 037 071	936 193	1 042 689	1,090 641	1 014 835	978 0
7-91 1188 1578 1741 30.98 20.500 21.314 71733 22.08 21.055 20.214 41.977 40.507 42.04 41.977 40.507 41.507 41.507 42.07 42.714 44.075 42.307 42.714 42.007 42.714 4	19 20U	16,200	19,200	19 200	19.200					19 200	19,200	19,200	19.200	19,200		19,200					19,200	19 200	19 200	19.200	19,200	19 200	19,200	19,300	19 200	19,760	19 200	19.3
268 2489 2.078 2.078 2.078 3.144 3.154 3.1	11,979	23,957	23,957	23,957	23,957	23,957	23 957	23,957	23,967	23,957	23 967	23,957	23 957	23,957	23 957	23 957	23,957	23,957	23,357	23,957	23.957	23 957	23 957	23.957	23,957	23 957	23 957	23 95/	23,957	23 357	23 957	25.9
2516 2349 2507 2507 2507 2507 2507 2507 2507 2507				· · · ·																												
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9722 9722 9722 9722 9722 9722 9722 9722	107	114	114	114	96	188	188	114	114	114	114	228	228	228	228	228	128	203	209	209	209	209	209	317	317	317	317	317	317	31/	317	
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15 1523 34 259 51 64 56,765 66,647 66,311 72,192 70,637 75,505 10 763 10 763 10 763 175,766 78,760 74,775 73,695 74,775 73,695 76,533 17,766 175,766 78,760 75,766 77,766 78,760 77,766 78,760	9.722	9,722	9 722	9,722	9.722	9.722	9,722	9,722	9,722	9 722	9 722	19 444	19,444	19 444	19 444	19,444	19 444	19 444	19,444	19,444	15,444	19 444	19 444	19 444	19,444	19 444	19 444	19 444	19,444	19 444	19 444	19.4
15 123 3 4 599 51 144 56,765 66,647 68,311 72 192 70,837 75,305 70 763 61,003 71,923 68,840 72,266 73,905 74,227 71,440 75,865 74,775 73,675 76,633 71,797 70,717 76,999 75,777 80,279 62,500 75,966 77,866 78,760 15,745		18 626																	-			-										
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407.931 3.087.780 5.385.098 6.433.318 7.357.289 7.528.990 8.079.688 7.918.007 8.535.190 7.891.454 9.861.626 7.910.789 7.477.163 7.919.723 8.082.900 8.163.152 7.769.732 8.392.449 8.235.414 8.082.941 8.472.037 7.778.907 8888 7.918.007 8.535.088 8.422.457 8.262.486 8.892.088 9.208.034 8.194.709 8.466.239 8.574.784 8.210.480 7.789.00	15 123	34.529	51,144	58,795	66,647	68,311	72.192	70,837	75,305	70 763	67,023	71,923	68,840	72,268	73 603	74.227	71 440	75 835	74,775	73 605	76 433	71 792	70 717	76 989	75 777	80,229	62 500	73 506	77,866	78 760	75 745	72.6
402 331 3 (082 780 5 365 066 6 433 316 7 357 289 7 528 850 8 (079 688 7 916 007 8 855 190 7 891 6 30 7 891 6 30 7 891 6 30 7 891 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 7 918 007 8 8 1 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 7 918 007 8 1 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 7 918 007 8 1 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 7 918 007 8 1 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 7 918 007 8 1 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 7 918 007 8 1 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 7 918 007 8 1 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 7 918 007 8 1 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 892 068 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 8 908 004 8 194 8 472 037 7 778 807 (1830 2 486 8 8 908 004 8 194 8 472 037 7 778 807 1 8 100 8 1				-														<u> </u>				<u> </u>									$\longrightarrow$	
	402,931	3,082,780	5,365,096	6,433,318	7,357,269	7,528,990	8,079,688	7,916,002	8,535,190	7,891,464	9,861,626	7,910,769	7,477,163	7,919,723	8,082,900	8,163,152	7,769,732	8,392,449	8,236,414	8,082,941	8,472,037	7,778,907	#########	8,422,457	8,262,486	8,892,068	9,208,034	8,194,209	8,496,239	8,574,264	8,210,480	7,906,6

Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	et-uni	Jul-19	Aug-19	Sep-19	Oct-19	Nov-18	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
3,921	4,177	4,177	4,177		6,905			4,177	4,177			4,291 765,358	4,291			4,291	3,941		3,941		3,941	3,941	4,049		4,049	4,049	4,049	4,049	4,049		
275,045	433,883	577,092	639,248	744,731	752,983	784,743	772,227	809,404	772,284	742,144	791,575	/60,308	793,215	807,970	811,927	788,835	824,522	816,654	806,036	830,184	798,007	789,779	845,825	834,172	870,897	890,399	766 416	768,910	773,121	748,893	728,511
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95,965	108,279	103,756	103,756	103,756	115,064	115,064	115,064	115,064	115,064	115,064	116,198	118,198	125,168	125,168	127,491	127,491	127,491	127,491	127,491	127,491	127,491	127,491	130,992	130,992	130,992	130,992	130,992	130,992	130,992	125,853	110,436
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3,154	316,892	593,572	722,684	814,204	832,833	898,094	879,465	953,976	877,547	814,182	884,022	833,146	884,022	902,651	911,964	865,373	939,926	921,278	902,651	949,220	865,373	846,725	943,868	925,220	999,794	1,037,071	936,193	1,042,689	1,060,841	1 014,835	9/8,035
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	2,156,671	4,025,633	4,894,936	5,614,713	5,743,171	6.192,967	6,064,509	6,567,542	6.041,906	5,609 314	6,021,315	5,667,885	6,021,315	6.149.773	6,213,808	5.892.858	6.401.289	6.272.832	6.149.773	6,465,324	5,892,858	5.764.400	6,401,289	6,272,832	6.786.662	7.043.578	6 263 610	6,452,289	6,507,056	6,221,659	5,993,341
			1,001,000		5,7 45,111	0,102,007	0,004,000	0,001,042	0,011,000		0,021,010		0,02,,010	0,140,710		0,002,000	0,401,100	0,212,002	0,145,773	0,400,021	5,052,000	0,104,400	0,401,200	0,272,002	0,700,001	1,045,570	0.200,010	0,432.203	0,507,050	0.227.035	0.300,341
	18,626			-		-				-	- :				-															,	
9,722	9.722	9.722	9,722	9,722	9,722	9,722	9,722	9,722	9,722	9,722	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19 444	19,444
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		<u> </u>					<u> </u>			2,500 000	<u>-</u>		<u>-</u>				<u> </u>	<u>:</u> _	-		:	2,500,000	·		· ·						
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15,123	34,529	51,144	58,795	66,647	68.311	72.192	70.837	75.305	70,763	67.023	71.923	68,840	72,268	73.603	74.227	71,440	75,835	74,775	73.605	76,433	71,792	70.717	76.989	75,777	80,229	82.500	73 506	77,866	78.760	75 745	72.841
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402,931	3,082,780	5,365,096	6,433,318	7,357,269	7,528,990	8,079,688	7,916,002	8,535,190	7,891,464	9,861,626	7,910,769	7,477,163	7,919,723	8,082,900	8,163,152	7,769,732	8,392,449	8,236,414	8,082,941	8,472,037	7,778,907	10,122,498	8,422,457	8,262,486	8,892,068	9,208,034	8,194,209	8,496,239	8,574,264	8,210,480	7,906,658

#### REDACTED

2020	2020	2020	2021	2021	2021	2021	2021	2021	2021	2021	4621	2021	2021	2021
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Oct-20	Nev-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	04-21	Nov-21	Dec.21
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										_				
162 167		152 096	74 537	74.537	76 157	68 380	42 130	19,769						
18,946	4./36	4 736	4 736	4,736	4.736	4,735	4.736	4,736						
427,144	363 934	213 481	141 474	141,474	126 964	97 944	54 413	10.883			· ·			
35 200	35 200	35,200	35,200	17,600										
3,732	912	912	912	745	746	745	746	746						
886 C05	692 779	232,372	4,731	4731	4731	4.731	4,731	4 731						
19,200	19,200	19,200	19,200	9.600	6.400	6,400	3,200	1,600				· ·		
23,957	23 967	23 957	23,957	11,979	2 995						· ·			
51,723	45.205	32,703	36 814	25,720	23.885	19,690	11 371	3,677						
6 639	5.431	5.431	7,264	3,912	881	540	540	540						
317	78	78	104	85	85	85	85	85						
19,444	19,444	19 444	19,444	19,444	19,444	19 444	19,444	19,444						
		2,500,000						7,188 003						
65.401	53,605	28,805	13 558	11.805	9.903	6,130	4 578	1 871						
7,142,421	5,637,044	4,636,341	371,952	326,369	276,929	230,827	146,274	7,256,084		-				-

1,1-12,12	1 0,007,044	1,000,041	071,002	020,005	210,020	200,027	1,10,21,1	7,200,001						
Oct.20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec.21
4,049	990	990	1,016	831	831	831	831	831	<u> </u>	<u> </u>	<u></u>	<u> </u>		<u> </u>
660,234	577,024	417,439	262,026	251,331	233,407	192,414	111,114	35,928	<u>-</u>	<u> </u>			-	<u> </u>
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84,741	69,324	69,324	71,177	38,227	8,612	5,276	5,276	5,276	ļ	<u> </u>	<u> </u>	<u> </u>	<u> </u>	
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							<u> </u>		<u> </u>	<u> </u>	<u> </u>	<u> </u>		<u> </u>
886,005	692,779	232,372	4,731	4,731	4,731	4,731	4,731	4,731	<u> </u>	<u> </u>	<u> </u>		<u> </u>	<u> </u>
						<u>_</u>	<u> </u>			<u> </u>	<u> </u>		<u> </u>	<u>_</u>
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5,422,547	4,223,879	1,367,966		<del></del>							- :	<u>.</u>		<u>:</u>
5,422,547									<del></del>	<del></del>	<del></del>	<u> </u>	-	<u> </u>
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19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	19,444	÷	<del>- :</del>	÷	<del></del>		<del></del>
13,444	15,444	15,444	19,444	19,444	15,444	15,444	15,444	10,444	<del></del>	<del></del>				
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<u> </u>		2,500,000	-					7,188,003	-	·		-		
						-								
65,401	53,605	28,805	13,558	11,805	9,903	8, 130	4,878	1,871		-			-	
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#### Yearly Totals for Escalation Calculations

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2016	2647	2013	2019	4020	2021	2022	2023	2024	A50	X274;	7.27
-		47,090,538	64,987,569	65,468,177		0	0	0	0	0	
-	3,239,555	4,702,754	5,933,785	2,726,626	-	0	0	0	0	0	
		1,135,273	1,992,076	761,905	•	0	0	0	0	0	
		-				0			0		
28,898	636,741	2,240,325	2,399,089	2,317,892	355,509	0			0		
17,015	112,726	738,877	738,877	558,894	28,418	0			0		
-	119,709	4,829,138	6,484,206	5,637,736	573,153	0			0	0	
		264,000	400,400	422,400	52,800	0			0		
-	74,632	59,374	46,769	39,140	4,644	0			0	0	
•	-	-	-	-	-	0	0	0	0	0	
		7,711,633	10,706,351	10,749,701	28,384	0		0	0	0	
	-	217,600	230,400	230,400	46,400	0	0		0	0	
		263,528	287,486	287,486	38,930	0	0	0	0	0	
-			-			0	0	0	0	0	
		204,038	510,367	695,812	111,157	0	0	0	0	0	
-		35,459	79,899	107,846	13,697	0	. 0		0	0	
		1,662	2,619	3,327	529	0			0	0	
•				-		0	0	0	0	0	
-						0	0		0	0	
						0	0	0	0	0	
-		116,667	233,333	233,333	116,667	0	0		0	0	
•		18,626				0	0	0	0	0	
-	500,000	2,500,000	2,500,000	2,500,000	7,188,003	0	0		0	0	
3,513	37,752	662,625	875,459	842,025	50,145	0	0		0	0	
						0	0	0	0	0	
						0	0	0	0	0	
49,425	4,721,116	72,792,118	98,408,685	93,582,702	8,608,436	-		-			-

APPENDIX C

DLIKE	CURRENT_FORM	FUTURE_FORM	TOU_STATUS	CELLULAR_STATUS	MTR_QTY
DUKE	3S 10	3S 20	NON-TOU	IPV6	6
DUKE	3S 10	3S 20	NON-TOU	DIRECT CONNECT	1
DUKE	3S 20	3S 20	NON-TOU	IPV6	22573
DUKE	3S 20	3S 20	NON-TOU	DIRECT CONNECT	1395
DUKE	5A 10	5S 20	NON-TOU	IPV6	104
DUKE	5A 10	5S 20	NON-TOU	DIRECT CONNECT	31
DUKE	5A 20	5S 20	NON-TOU	IPV6	225
DUKE	5A 20	5S 20	NON-TOU	DIRECT CONNECT	50
DUKE	5S 10	5S 20	NON-TOU	IPV6	1
DUKE	5S 20	5S 20	NON-TOU	IPV6	5919
DUKE	5S 20	5S 20	NON-TOU	DIRECT CONNECT	533
DUKE	9A 10	9S 20	NON-TOU	IPV6	37
DUKE	9A 10	9S 20	NON-TOU	DIRECT CONNECT	9
DUKE	9A 20	9S 20	NON-TOU	IPV6	91
DUKE	9A 20	9S 20	NON-TOU	DIRECT CONNECT	15
DUKE	9S 10	9S 20	NON-TOU	IPV6	8
DUKE	9S 10	9S 20	NON-TOU	DIRECT CONNECT	1
	9S 20	9S 20		IPV6	13666
DUKE	9S 20	9S 20	NON-TOU		998
DUKE		9S 20	NON-TOU	DIRECT CONNECT	
DUKE	9S 200		NON-TOU	IPV6	531
DUKE	9S 200	9S 20	NON-TOU	DIRECT CONNECT	21
DUKE	10A 20	9S 20	NON-TOU	IPV6	6
DUKE	10A 20	9S 20	NON-TOU	IPV6	62
DUKE	10A 20	9S 20	NON-TOU	DIRECT CONNECT	1
DUKE	10A 20	9S 20	NON-TOU	DIRECT CONNECT	6
DUKE	10S 20	9S 20	NON-TOU	IPV6	1
DUKE	16K 480	9S 20	NON-TOU	IPV6	142
DUKE	16K 480	9S 20	NON-TOU	IPV6	2205
DUKE	16K 480	9S 20	NON-TOU	DIRECT CONNECT	11
DUKE	16K 480	9S 20	NON-TOU	DIRECT CONNECT	76
DUKE	16S 480	9S 20	NON-TOU	IPV6	4
DUKE	16S 480	9S 20	NON-TOU	DIRECT CONNECT	2
DUKE	25S 320	9S 20	NON-TOU	IPV6	1
DUKE	25S 320	9S 20	NON-TOU	IPV6	55
DUKE	25S 320	9S 20	NON-TOU	DIRECT CONNECT	1
DUKE	25S 320	9S 20	NON-TOU	DIRECT CONNECT	1
DUKE	1S 100	1S 200	TOU	IPV6	1073
DUKE	1S 100	1S 200	TOU	DIRECT CONNECT	68
	1S 200	1S 200	TOU	IPV6	
DUKE	13 200	13 200			7
DUKE DUKE			TOU	DIRECT CONNECT	
DUKE	1S 200	1S 200	TOU TOU	DIRECT CONNECT	2
DUKE DUKE	1S 200 2S 200	1S 200 2S 200	TOU	IPV6	2 4956
DUKE DUKE DUKE	1S 200 2S 200 2S 200	1S 200 2S 200 2S 200	TOU TOU	IPV6 DIRECT CONNECT	2 4956 216
DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320	1S 200 2S 200 2S 200 2S 320	TOU TOU TOU	IPV6 DIRECT CONNECT IPV6	2 4956 216 23715
DUKE DUKE DUKE DUKE DUKE	1\$ 200 2\$ 200 2\$ 200 2\$ 320 2\$ 320	1S 200 2S 200 2S 200 2S 320 2S 320	TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT	2 4956 216 23715 1246
DUKE DUKE DUKE DUKE DUKE DUKE	1\$ 200 2\$ 200 2\$ 200 2\$ 320 2\$ 320 3\$ 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20	TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159
DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1\$ 200 2\$ 200 2\$ 200 2\$ 320 2\$ 320 3\$ 20 3\$ 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20	TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT	2 4956 216 23715 1246 5159 307
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1\$ 200 2\$ 200 2\$ 200 2\$ 320 2\$ 320 3\$ 20 3\$ 20 5A 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20	TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20	TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT	2 4956 216 23715 1246 5159 307 30 5
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20	1\$ 200 2\$ 200 2\$ 200 2\$ 320 2\$ 320 3\$ 20 3\$ 20 5\$ 20 5\$ 20 5\$ 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 5S 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 5S 20 9A 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 5S 20 9A 20 9A 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20 9S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20 9S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20 9S 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20 9S 20 9S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20 9S 20 9S 20 9S 20 9S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 9S 200	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 9S 200 9S 200 10A 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 20 9S 200 10A 20 10A 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 10A 20 10A 20 10A 20 12S 200	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 20 9S 200 10A 20 10A 20	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 10A 20 10A 20 10A 20 12S 200	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 9S 200 10A 20 10A 20 12S 200 12S 320	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20 12S 200 12S 320	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 9S 200 10A 20 10A 20 12S 200 12S 320 14S 200	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20 12S 200 12S 320 16S 320	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 10A 20 10A 20 12S 200 14S 200 15S 480	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20 9S 20 1S 20 12S 200 12S 320 16S 320	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2 31
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 10A 20 10A 20 10A 20 112S 200 12S 320 14S 200 15S 480 15S 480	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20 9S 20 12S 200 12S 320 16S 320 16S 320	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 IPV6 IPV6 IPV6 IPV6 IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2 31 2
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 9S 200 10A 20 10A 20 10A 20 12S 200 12S 320 14S 200 15S 480 15S 480 16K 480	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20 12S 200 12S 200 12S 320 16S 320 16S 320 16S 320 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2 31 2 657
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 9S 200 10A 20 10A 20 10A 20 12S 200 12S 320 14S 200 15S 480 15S 480 16K 480	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2 31 2 657 7
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 10A 20 10A 20 10A 20 112S 200 112S 320	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5S 20 5S 20 5S 20 5S 20 9S 20 12S 200 12S 320 16S 320 16S 320 9S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 IPV6 IPV6 IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2 31 2 657 7 10
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 5A 20 5A 20 5S 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 10A 20 10A 20 12S 200 12S 200 12S 320 14S 200 15S 480 15S 480 16K 480 16K 480 16S 320 16S 320	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20 12S 200 12S 320 16S 320 16S 320 16S 320 16S 320 16S 320 16S 320	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 IPV6 IPV6 IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2 31 2 657 7 10 1937 43
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9A 20 9S 20 9S 20 9S 200 10A 20 10A 20 10A 20 12S 200 12S 320 14S 200 15S 480 15S 480 16K 480 16K 480 16K 480 16S 320 16S 320 16S 320	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20 12S 200 12S 320 16S 320	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 IPV6 IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2 31 2 657 7 10 1937 43 35
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9A 20 9S 20 9S 20 9S 200 10A 20 10A 20 10A 20 12S 200 12S 320 14S 200 15S 480 16K 480 16K 480 16K 480 16S 320 16S 320 16S 320 16S 480	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20 12S 200 12S 320 16S 320 9S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 IPV6 IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2 31 2 657 7 10 1937 43 35 4
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5A 20 5A 20 5S 20 5S 20 9A 20 9A 20 9S 20 9S 20 9S 200 10A 20 10A 20 10A 20 12S 200 12S 320 14S 200 15S 480 16S 480 16S 320 16S 320 16S 480 25S 320	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20 12S 200 12S 320 16S 320 9S 20 9S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 IPV6 IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2 31 2 657 7 10 1937 43 35 4 92
DUKE DUKE DUKE DUKE DUKE DUKE DUKE DUKE	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5A 20 5A 20 5S 20 9A 20 9A 20 9A 20 9S 20 9S 20 9S 200 10A 20 10A 20 10A 20 12S 200 12S 320 14S 200 15S 480 16K 480 16K 480 16K 480 16S 320 16S 320 16S 320 16S 480	1S 200 2S 200 2S 200 2S 320 2S 320 3S 20 3S 20 3S 20 5S 20 5S 20 5S 20 9S 20 12S 200 12S 320 16S 320 9S 20 9S 20	TOU TOU TOU TOU TOU TOU TOU TOU TOU TOU	IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 IPV6 IPV6 IPV6 IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6 DIRECT CONNECT IPV6	2 4956 216 23715 1246 5159 307 30 5 2077 191 72 15 11613 632 99 1 7 2 18 4 2 31 2 657 7 10 1937 43 35 4

INSTALLER	CURRENT_FORM	FUTURE_FORM	TOU_STATUS	CELLULAR_STATUS	MTR_QTY
CONTRACTOR	1S 100	1S 200	NON-TOU	IPV6	88
CONTRACTOR	1S 100	1S 200	NON-TOU	IPV6	2259
CONTRACTOR	1S 100	1S 200	NON-TOU	DIRECT CONNECT	6
CONTRACTOR	1S 100	1S 200	NON-TOU	DIRECT CONNECT	156
CONTRACTOR	1S 200	1S 200	NON-TOU	IPV6	2
CONTRACTOR	2S 200	2S 200	NON-TOU	IPV6	4651
CONTRACTOR	2S 200	2S 200	NON-TOU	IPV6	1299013
CONTRACTOR	2S 200	2S 200	NON-TOU	DIRECT CONNECT	564
CONTRACTOR	2S 200	2S 200	NON-TOU	DIRECT CONNECT	50011
CONTRACTOR	2S 320	2S 320	NON-TOU	IPV6	548
CONTRACTOR	2S 320	2S 320	NON-TOU	IPV6	37067
CONTRACTOR	2S 320	2S 320	NON-TOU	DIRECT CONNECT	69
CONTRACTOR	2S 320	2S 320	NON-TOU	DIRECT CONNECT	1880
CONTRACTOR	12S 200	12S 200	NON-TOU	IPV6	142
CONTRACTOR	12S 200	12S 200	NON-TOU	IPV6	27444
CONTRACTOR	12S 200	12S 200	NON-TOU	DIRECT CONNECT	2
CONTRACTOR	12S 200	12S 200	NON-TOU	DIRECT CONNECT	34
CONTRACTOR	12S 320	12S 320	NON-TOU	IPV6	5
CONTRACTOR	12S 320	12S 320	NON-TOU	IPV6	12
CONTRACTOR	15S 200	16S 320	NON-TOU	IPV6	1
CONTRACTOR	15S 480	16S 320	NON-TOU	IPV6	2
CONTRACTOR	16S 200	16S 320	NON-TOU	IPV6	222
CONTRACTOR	16S 200	16S 320	NON-TOU	IPV6	10438
CONTRACTOR	16S 200	16S 320	NON-TOU	DIRECT CONNECT	13
CONTRACTOR	16S 200	16S 320	NON-TOU	DIRECT CONNECT	283
CONTRACTOR	16S 320	16S 320	NON-TOU	IPV6	499
CONTRACTOR	16S 320	16S 320	NON-TOU	IPV6	16275
CONTRACTOR	16S 320	16S 320	NON-TOU	DIRECT CONNECT	44
CONTRACTOR	16S 320	16S 320	NON-TOU	DIRECT CONNECT	400

EXHIBIT E

ENTER DATA	REDACTED			2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019
			Total	1/31/2018	2/28/2018	3/31/2018	4/30/2018	5/31/2018	6/30/2018	7/31/2018	8/31/2018	9/30/2018	10/31/2018	11/30/2018	12/31/2018	1/31/2019	2/28/2019	3/31/2019	4/30/2019	5/31/2019	6/30/2019	7/31/2019	8/31/2019	9/30/2019	10/31/2019	11/30/2019	12/31/2019
AMI Meters - Purchased			1,555,256	100		17,000	32,000	39,000	43,500	44,500	48,000	47,000	51,000	46,900	43,500	47,000	44,273	47,000	48,000	48,500	46,000	50,000	49.000	48.000	50,500	46,000	45.000
AMI Meters - Installed			1,555,256	100	0	17,000	32,000	39,000	43,500	44,500	48,000	47,000	51,000	46,900	43,500	47,000	44,273	47,000	48,000	48,500	46,000	50,000	49,000	48,000	50,500	46,000	45,000
Duke Instal	illed	6.631%	103,124	7	0	1,127	2,122	2,586	2,884	2,951	3,183	3,116	3,382	3,110	2,884	3,116	2,936	3,116	3,183	3,216	3,050	3,315	3,249	3,183	3,349	3.050	2,984
Contractor Instal			1,452,132	93	٥	15,873	29,878	36,414	40,616	41,549	44,817	43,884	47,618	43,790	40,616	43,884	41,337	43,884	44,817	45,284	42,950	46,685	45,751	44,817	47,151	42,950	42,016
	% Complete		100.00%	0.01%	0.00%	1.09%	2.06%	2.51%	2.80%	2.86%	3.09%	3.02%	3.28%	3.02%	2.80%	3.02%	2.85%	3.02%	3.09%	3.12%	2.96%	3.21%	3.15%	3.09%	3.25%	2.96%	2.89%
				0.01%	0.01%	1.10%	3.16%	5.66%	8.46%	11.32%	14.41%	17.43%	20.71%	23.73%	26.52%	29.54%	32 39%	35.41%	38.50%	41.62%	44.58%	47.79%	50.94%	54.03%	57.28%	60.23%	63.13%
Sockets (for A and K based meters)					_																						
sockets (for A and K pased meters)	% Complete	0.000%	3,866 100.00%	0 000	0	232 6.00%	6.00%	232	232 6.00%	232	232	232	232	232	232	129 3.33%	129	129	129	129	129	129	129	129	129	129	129
	75 Complete		100.00%	0.00%	0.00% 300.0	6.00%	12.00%	6.00% 18.00%	24.00%	6.00% 30.00%	6.00% 36.00%	6.00% 42.00%	6.00% 48.00%	6.00%	60.00%		3.33%	3.33% 70.00%	3.33% 73.33%	3.33% 76.67%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%	3.33%
				0.00%	0.00%	6.00%	12.00%	18.00%	24.00%	30.00%	36.00%	42.00%	48.00%	54.00%	60.00%	63.33%	66.67%	70.00%	73.33%	76.67%	80.00%	83.33%	86.67K	90.00%	93.33%	96.67%	100.00%
Connected Grid Routers		0.193%	2.475	1		40	69	82	92	94	101	99	105	97	91	91	85	91	93	94	49	96	94	93	97		87
	% Complete		100.00%	0.04%	0.00%	1.62%	2.79%	3.31%	3.72%	3.80%	4.08%	4.00%	4.24%	3.92%	3.68%	3.68%	3.43%	3.68%	3.76%	3.80%	3.60%	3.88%	3.80%	3.76%	3.92%	3.60%	3.52%
				0.04%	0.04%	1.66%	4.44%	7.76%	11.47%	15.27%	19.35%	23.35%	27.60%	31.52%	35.19%	38.87%	42.30%	45.98%	49.74%	53.54%	57.13%	61.01%	64.81%	68.57%	72.48%	76.08%	79.60%
660 CSRs in 2017 from 2019 install				8/31/2017	9/30/2017	10/31/2017	11/30/2017	12/31/2017																			
Connected Grid Routers			603	120	120	120	120	120																			
	% Complete		100.00%	20.00%	20.00%	20.00%	20.00%	20.00%																			
				20.00%	40.00%	60.00%	80.00%	100.00%																			
Range Extenders		0.900%	10,000						391	400	432	423	450	422	391	472	100	422	423	426	414	450	441	422	454	414	405
	% Complete		100.00%	0.01%	0.00%	0.00%	0.00%	0.00%	3.91%	4.00%	4.32%	4.23%	4.59%	4.22%	3.91%	4.23%	3.98%	4.23%	4.32%	4.36%	4.14%	4.50%	4.41%	4.32%	4.54%	4.14%	4.05%
	cumpiece		200.0071	0.01%	0.01%	0.01%	0.01%	0.01%	3.92%	7.92%	12.24%	16.47%	21.06%	25.28%	29.19%	33.42%	37.40%	41.63%	45,55%	50.31%	54.45%	58.95%	63.36%	67.68%	72.22%	76.36%	80.41%
				*****	0.02.0			******			26.5410	2014770	22.00%	23.200	25.257	33.42.0	37.4070	42.0270	45.55%	30.3270	34,434	30.3370	03.30%	67.6670	72.2279	76.5676	80.420
SSN network devices		0.000%	2,400	0	0		0	0	0	0	0	0	0		0		0	0	0	0	0	0	0	0	٥	0	
	% Complete		100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Overall	% Complete		1,573,997	0.01%	0.00%	1.10%	2.05%	2.50%	2.81%	2.87%	3.10%	3.03%	3.29%	3.03%	2.81%	3.03%	2.85%	3.03%	3.09%	3.12%	2.96%	3.22%	3.16%	3.09%	3.25%	2.96%	2.90%
			100,00%	0.01%	0.01%	1.10%	3.16%	5.65%	8.46%	11.34%	14.43%	17.47%	20.76%	23.79%	26.60%	29.62%	32.47%	35.50%	38.59%	41.72%	44.68%	47.90%	51.05%	54.24%	57.40%	60.36%	63.26%

rear	Meters	LGK	KPKE
2018	412,500	1,471	2,919
2019	569,273	1,099	5,122
2020	573,483	505	1,959
2021	0	0	0
	1,555,256	3,075	10,000

	AMI	CGR	RFRE
Hardware			
Accessories			
Misc.			
Adders			
	177,546,284	16,602,720	3,889,254
Unit costs			
Less Adders	\$ 105.14		
M&O	(18.626)		

Meter Type	Total	TOU	Non-TUO	Cellular		Current Form	Future Form	TOU	Non-TUO	Cellular	Total	Itron Meter Type
15 100	3,650	1,141	2,509	230		15 100	15 200			0		
15 200	11	9	2	2	421,920		15 200	1,150	2,511	232	3,661	CIM / CIC
25 200	1,359,411	5,172	1,354,239	50,791	127,775,211		25 200	5,172	1,354,239	50,791	1,359,411	C2M / C2DC
25 320	64,525	24,961	39,564	3,195	6,994,302	25 320	25 320	24,961	39,564	3,195	64,525	C2M3 / C2C3B
35 10	7	0	7	1		35 10	35 20			0		
35 20	29,434	5,466	23,968	1,702	6,509,461	35 20	35 20	5,466	23,975	1,703	29,441	C3M / C3C
5A 10	135	0	135	31		5A 10	55 20			۰		
5A 20	310	35	275	55	0	5A 20	5S 20			0		
55 10	1	0	1	0		55 10	55 20			0		
55 20	8,720	2,268	6,452	724	2,051,298		5S 20	2,303	6,863	810	9,166	CSM / CSC
9A 10	46	0	46	9	0	9A 10	95 20			0		
9A 20	193	87	106	30	0	9A 20	95 20			0		
95 10	9	0	9	1	0	95 10	95 20			0		
95 20	26,909	12,245	14,664	1,630	0	95 20	95 20			0		
95 200	652	100	552	22	0	95 200	95 20			0		
10A 20	84	9	75	. 9	0	10A 20	95 20			0	- 1	
105 20	1	0	1	0	6,119,419	105 20	95 20	13,238	17,951	1,805	31,189	C9M / C9C
125 200	27,640	18	27,622	36	3,361,283	125 200	125 200	18	27,622	36	27,640	C12NM / C12N
125 320	21	4	17	0	4,536	125 320	125 320	4	17	0	21	C12M3 / C12C3
145 200	2	2	0	0	0	145 200	165 320			0		
155 200	1	0	1	0	0	155 200	165 320			0		
155 480	35	33	2	2	0	155 480	165 320			0		
16K 480	3,098	664	2,434	94	0	16K 480	95 20			0	- 1	
165 200	10,966	10	10,956	296	0	165 200	165 320			0		
165 320	19,198	1,980	17,218	487	5,840,839	165 320	165 320	2,025	28,177	785	30,202	C16M3 / C16C3
165 480	45	39	6	6	0	165 480	95 20			0		
255 320	152	94	58	4		255 320	95 20			۰		
	1,555,256	54,337	1,500,919	59,357	159,078,269		Totals	54,337	1,500,919	59,357	1,555,256	
				Per Meter \$	102.28							

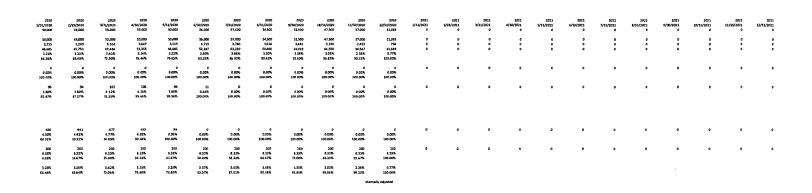
A based 768 K based 3,098 3,866

Device Type		Jurisdiction		Totals
	DEF	UCP	Unknown	Grand Total
Archive Comme	-/-	37		6.00.00.00
Active	199	329		528
Installed	1			
ME AYES WAS		4 (10)	and the same said	the street of the st
Active	1157	2056	2	3215
Installed	2	6		
Grand Total	1359	2393	2	3754

INSTALLER	CURRENT, FORM	FUTURE FORM	TOU STATUS	CELLULAR STATUS		
CONTRACTOR	15 100	15 200				
			NON-TOU	IPV6	2259	
CONTRACTOR	15 100	15 200	NON-TOU	DIRECT CONNECT	156	
CONTRACTOR	15 200	15 200	NON-TOU	IPV6	2	
CONTRACTOR	25 200	25 200	NON-TOU	IPV6	1299013	
CONTRACTOR	25 200	25 200	NON-TOU	DIRECT CONNECT	50011	
CONTRACTOR	25 320	2S 320	NON-TOU	IPV6	37067	
CONTRACTOR	25 320	25 320	NON-TOU	DIRECT CONNECT	1880	
CONTRACTOR	10A 20	95 20	NON-TOU	IPV6	62	
CONTRACTOR	10A 20	95 20	NON-TOU	DIRECT CONNECT	6	
CONTRACTOR	105 20	95 20	NON-TOU	IPV6	1	
CONTRACTOR	125 200	125 200	NON-TOU	IPV6	27444	
CONTRACTOR	125 200	125 200	NON-TOU	DIRECT CONNECT	34	
CONTRACTOR	125 320	125 320	NON-TOU	IPV6	12	
CONTRACTOR	155 200	165 320	NON-TOU	IPV6	1	
CONTRACTOR	155 480	165 320	NON-TOU	IPV6	2	
CONTRACTOR	16K 480	95 20	NON-TOU	IPV6	2205	
CONTRACTOR	16K 480	95 20	NON-TOU	DIRECT CONNECT	76	
CONTRACTOR	165 200	165 320	NON-TOU	IPV6	10438	
CONTRACTOR	165 200	165 320	NON-TOU	DIRECT CONNECT	283	
CONTRACTOR	165 320	165 320	NON-TOU	IPV6	16275	
CONTRACTOR	165 320	165 320	NON-TOU	DIRECT CONNECT	400	
CONTRACTOR	165 480	95 20	NON-TOU	IPV6	4	
CONTRACTOR	165 480	95 20	NON-TOU	DIRECT CONNECT	2	
CONTRACTOR	255 320	95 20	NON-TOU	1946	55	
CONTRACTOR	255 320	95 20	NON-TOU	DIRECT CONNECT	1	14476
DUKE	15 100	15 200	NON-TOU	IPV6	88	
DUKE	15 100	15 200	TOU	IPV6	1073	
DUKE	15 100	15 200	NON-TOU	DIRECT CONNECT	6	
DUKE	15 100	15 200	TOU	DIRECT CONNECT	68	

EUX#	15 700	15 200	TOU	IPV6	7
urf	15 100	15 200	TOU	DIRECT CONNECT	2
UET	25 200	25 200	HON-TOU	(PV6	4651
OLE OLE	25 200	25 700	TOU	(PV6	4956
nuci	25 200	25 200	NON-TOU	DIRECT CONNECT	564
	25 200	25 200	TOU	DIRECT CONNECT	216
unit.			NON-TOU	IPV6	***
UKE	25 320	25 320			23715
uxt	25 320	25 320	TOU	IPV6	
IUKE	25 320	25 320	NON-TOU	DIRECT CONNECT	69
UKE	25 320	25 120	TOU	DIRECT CONNECT	1246
UKE	35 10	35 20	NON-TOU	IPV6	6
uxi	35 10	15 20	NON-TOU	DIRECT CONNECT	1
WE	35 20	35 20	NON-TOU	IPV6	22573
OIKE	35 20	25 20	TOU	IPV6	5159
4KE	35.20	35 20	NON-TOU	DIRECT CONNECT	1395
und	35 20	35.20	TOU	CHRECT CONNECT	307
UKE	5A 10	55 20	NON-TOU	IPV6	104
UKE	5A 10	55 20	NON-TOU	DIRECT CONNECT	31
OKE	5A 70	55 20	NON-TOU	IPV6	225
		25 20	TOU	IPV6	30
WKE	5A 20			DIRECT CONNECT	50
UXE	5A 20	56 20	NON-TOU		
CICL	5A 20	55 20	TOU	DIRECT CONNECT	5
VKE	35 10	55 20	NON-TOU	1PV6	1
UKE	55 20	55 20	NON-TOU	IPV6	5919
UKE	55 20	55 20	TOU	IPV6	2077
eret	55 20	55 20	NON-TOU	DIRECT CONNECT	533
uxt	55.20	55.20	TOU	DIRECT CONNECT	191
UIC(	9A 10	95.20	NON-TOU	IPV6	37
uici	3A 10	95 20	NON-TOV	DIRECT CONNECT	,
MES	36.20	25 20	NON-TOU	Itve	*1
UKT	9A 20	95.10	TOU	IPVE	n
UKE	9A 20	95 20 95 20	NON-TOU	DIRECT CONNECT	15
			TOU TOU	DIRECT CONNECT	15
UKE	9A 20	95 20			
UKE	95 10	95 20	NON-TOU	IPV6	i
UKE	95 10	95.20	NON-TOU	DIRECT CONNECT	
UKĖ	95 20	95 10	NON-TOU	IPV6	13666
UKE	95 20	95 20	TOU	tPV6	11623
UKE	95 20	95 20	NON-TOU	DIRECT CONNECT	998
UKE	95 20	95 20	TOU	DIRECT CONNECT	632
CIKE	95 200	95 20	NON-TOU	tPV6	331
UKF	95 200	95 20	TOU	IPV6	99
UKI	95 200	95 20	NON-TOU	DIRECT CONNECT	21
uxt	95 200	95.20	TOU	DIRECT CONNECT	1
UKÉ	10A 20	95.70	NON-TOU	IPVE	
UKE	10A 20	95 10	TOU	1946	,
UKE	10A 20	25.20	NON-TOU	DIRECT CONNECT	i
UKE	10A 20	95.10	TOU	DIRECT CONNECT	1
UKE	125 200	125 200	NON-TOU	IPV6	342
		125 200	TOU	IPV6	11
UKE	125 700			DIRECT CONNECT	**
UKE	125 200	125 200	NON-TOU		
UKE	125 320	125 320	NON-TOU	IPV6	5
UKE	125 320	125 320	TOU	IPV6	•
UKE	145 200	165 320	TOU	IPV6	2
UKE	155 480	165 320	TOU	IPVE	31
UKE	155 480	265 320	TOU	DIRECT CONNECT	2
UKE	16K 480	95-20	NON-TOU	IPV6	142
UKE	16K 480	95 20	TOU	IPV6	657
UKE	16K 480	95 20	NON-TOU	DIRECT CONNECT	11
UKE	16K 480	95 20	TOU	DIRECT CONNECT	,
UKE	165 200	265 320	NON-TOU	IPV6	222
UKE	165 200	165 320	TOU	IPV6	10
	165 200	165 320	NON-TOU	DIRECT CONNECT	13
ukt	165 100	165 920	NON-TOU	IPVA	499
UKE		165 320	TOU	1946	1937
UKE	165 320			DIRECT CONNECT	44
UKE	165 320	165 320	NON-TOU		43
UKE	165 320	165 320	TOU	DIRECT, CONNECT	
UKE	165 480	95 20	tou	IPV6	35
UKE	165 480	95 20	TOU	DIRECT CONNECT	4
UKE	255 320	95 20	NOX-TOU	IPV6	
UKE	255 320	95 20	TOU	IPV6	92
VICE	255 320	95 20	NON-TOU	DIRECT CONNECT	1

•



#### User Notes

- 1. This worksheet is linked to the Title Block Worksheet for project date information used in Columns J AF. It looks up Escalation Index information from the [DOE Escalation Rates] tab for Columns R X. However, you can manually enter in Escalation % information in Columns R X if you chose to utilize Escalation data from an alternate source.
- 2. All data fields that are "blue" font, must be keyed in manually. All other fields are formulas. All items to be Escalated must be keyed manually due to the fact that no two projects will escalate costs in a like manner.
- 3. This sheet is "Optional". It can be used in lieu of keying the Escalation %'s by Work Phase/WBS/Task ID on the Detail Summary Sheet.

## Project Name: DEP - AMR to AMI Deployment

ľ				Total \$'s being	Apply			ENTER PLANNED CASH FLOW IN THIS SECTION (per Commodity being Escalated)								
Display	Item	Escalation Category	Item Description	Escalated	Escalation	Total Escalation	% of Total	<b>Year 1</b> 2014	<b>Year 2</b> 2015	<b>Year 3</b> 2016	<b>Year 4</b> 2017	<b>Year 5</b> 2018	<b>Year 6</b> 2019	<b>Year 7</b> 2020	<b>Year 8</b> 2021	<b>Year 9 Year 10</b> 2022 2023
Yes	001.	Grand Total - All Work Phases / WBS / Tasks		29,793,872		1,766,413	5.93%	-	-	-	-	8,612,842	10,587,227	9,493,948	1,099,855	
Yes	002.	Materials - Materials		<u>-</u>		-	0.00%	-	-	-	-	-		-	-	
Yes	003.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	004.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	005.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	006.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	007.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	008.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	009.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	-
Yes	010.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	•	-	-
Yes	011.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	•	-	-
Yes	012.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	•	-	-
Yes	013.	Internal Labor		25,711,776		1,529,512	5.95%	-	-	-	-	7,346,437	9,160,465	8,225,169	979,706	
Yes	014.	Scientific & Laboratory	Project Management	7,312,816	Yes	434,627	5.94%	-	-	-	-	2,240,325	2,399,089	2,317,892	355,509	
Yes	015.	Scientific & Laboratory	Field Services	17,524,233	Yes	1,042,878	5.95%	-	-	-	-	4,829,138	6,484,206	5,637,736	573,153	
Yes	016.	Scientific & Laboratory	Telecom	149,927	Yes	8,138	5.43%	-	-	-	-	59,374	46,769	39,140	4,644	
Yes	017.	Scientific & Laboratory	Billing	724,800	Yes	43,869	6.05%	-	-	-	-	217,600	230,400	230,400	46,400	
Yes	018.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	019.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	020.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	021.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	022.		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	023.		TBD	-	Yes		0.00%	_	-	-	-	-	-	-	-	
Yes	024.	Staff Aug Labor		4,082,096	1 1	236,901	5.80%	-	-	-	-	1,266,405	1,426,762	1,268,780	120,149	
Yes	025.	Scientific & Laboratory	Project Management	2,065,066	Yes	112,811	5.46%	-	-	-	-	738,877	738,877	558,894	28,418	
Yes	026.	Scientific & Laboratory	Field Services	1,139,600	Yes	71,738	6.29%	_	-	-	-	264,000	400,400	422,400	52,800	
Yes	027.	Scientific & Laboratory	Telecom	-	Yes	-	0.00%	-	-	-	-	-	-		-	
Yes	028.	Scientific & Laboratory	Billing TBD	877,430	Yes	52,352	5.97%	-	-	-	-	263,528	287,486	287,486	38,930	
Yes	029.			-	Yes	<u>-</u>	0.00%	-	-	-	-	-	-	-	-	
Yes	030.		TBD TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	
Yes	031.		TBD	-	Yes	-	0.00% 0.00%	-	-	-	-	-	-	-	-	
Yes	032. 033		TBD	-	Yes	-	0.00%	-	-	-	-	-	-	-	-	-
Yes Yes	033. 034.		TBD	-	Yes Yes	<u> </u>	0.00%		-	-	-		-	-		
		#REF!	TDD				0.00%		-		-			-	-	
Yes	035.	#REF!	TDD	-		•		-	-	-	-	-	-	-	-	• •
Yes	036. 037.		TBD TBD	-	Yes Yes	-	0.00% 0.00%	-	-	-	-	-	-	-	-	
Yes	037.		TBD	-		-	0.00%	-	-	-	-	-	-	-	-	
Yes Yes	038.		TBD	-	Yes Yes	<u> </u>	0.00%	-	-	-	-	-	-	-	-	
Yes	039. 040.		TBD	-	Yes	<u> </u>	0.00%		-	-				-	-	
Yes	040. 041.		TBD	-	Yes	<u> </u>	0.00%		_	-	-		-	-	-	
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Yes	042.		TBD		Yes	<u> </u>	0.00%		_					-	-	
Yes	043. 044.		TBD	-	Yes	<u>-</u>	0.00%		-	_				-	-	
Yes	044. 045.		TBD		Yes	<u> </u>	0.00%		_				-	-	-	
169	U <del>4</del> 5.		100	_	162	<u> </u>	0.00 /6		_	-	-		_	-	-	-

202																										
Variable   Variable						Fscal	ation Index no	r Year - Raseo	on Published	Data from the	DOF									Escalation Ca	lculations					
241,160 \$52,885 \$80,865 \$123,935 \$						Year 4	Year 5	Year 6	Year 7	Year 8	Year 9								Year 5	Year 6	Year 7					<b>Year 12</b> 2025
1			2014	2015	2010	2017	2016	2019	2020	2021	2022	2023	2024	2023			2016	2017								2023
1		-													-		-	-	211,100				-	-	-	-
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1,000   1,000   1,000   1,000   1,000   1,000   1,008   1,018   1,114   1,143   1,172   1,201   1,200   1,200   1,200   2,4,46   4,438		-															-	-				-			-	
	-	-	1.000			1.000				1.114	1.143	1.172	1.201	1.230	-	-	-	-	7,379	16,099	24,436	4,438	-	-	-	-
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Labor Loa	ders for Year 2	017
	firmed per Finance	
	Planning Rates	,
	(for 2017 and	Planning Rates
Fringe Benefits	beyond)	(for 2018 and beyond)
DE Progress	14.92%	(confirm with Finance)
DEBS (Shared Serv. Co.)	21.08%	(confirm with Finance)
	Planning Rates	Diametra Batas
	(for 2017 and	Planning Rates
Incentive	beyond)	(for 2018 and beyond)
Average (Non-Union)	10.50%	(confirm with Finance)
Average (Union)	3.00%	(confirm with Finance)
	Managa da	
	Planning Rates	_, , _,
	(for 2017 and	Planning Rates
Payroll Tax	beyond)	(for 2018 and beyond)
Average	7.65%	(confirm with Finance)
	Planning Rates	
	(for 2017 and	Planning Rates
Labor Loaders	beyond)	(for 2018 and beyond)
Shared Serv. Co.	25.32%	(confirm with Finance)
DE Carolinas (T&D/E&TS)	45.00%	(confirm with Finance)
DE Progress (T&D/E&TC)	45.00%	(confirm with Finance)
Affiliate	55.00%	(confirm with Finance)

	Planning Rates	
	(for 2017 and	Planning Rates
Fleet Loader	beyond)	(for 2018 and beyond)
All Jurisdictions	3.00%	(confirm with Finance)

Labor Loaders for Year 2017*									
Jurisdiction	Shared Service Co	T&D / E&TS	Affiliate Factor						
Factor Factor**									
DE Progress 1.68 1.78 1.88									
* Includos Eringo Incontivo	Dourell & Londorn		•						

<sup>\*</sup> Includes Fringe, Incentive, Payroll & Loaders

\*\* Field Operations Employees / Engineering & Supervision

	Fleet Loader for	Year 2017*	
All Jurisdictions		1.03	

Shared Service		
Co.	T&D / E&TC	Affiliate
0.68	0.78	0.88

Fleet Loader

Material Loader (rates per Finance er						
Sales / Use Tax*	Planning Rates					
(by State of Use)	beyond)	(for 2018 and beyond)				
North Carlolina	7.00%	(confirm with Finance)				
Stores Loading** (by Jurisdiction)	Planning Rates (for 2017 and beyond)	Planning Rates (for 2018 and beyond)				
DE - Progress (SetID 50126)	10.00%	(confirm with Finance)				

	Planning Rates (for 2017 and	Planning Rates
Working Stock***	beyond)	(for 2018 and beyond)
All Jurisdictions	5.50%	(confirm with Finance)

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	Nuclear		lear Scientific & Laboratory		Administration Buil	ding & Warehouse	Remediation, Decontamination, and Demolition	
FY	Rate	Index	Rate	Index	Rate	Index	Rate	Index
2011	2.000	1.000	2.300	1.000	2.600	1.000	2.900	1.000
2012	1.900	1.000	2.200	1.000	2.400	1.000	2.400	1.000
2013	1.900	1.000	2.400	1.000	2.800	1.000	2.900	1.000
2014	2.000	1.000	2.500	1.000	3.000	1.000	3.000	1.000
2015	2.000	1.020	2.600	1.000	3.000	1.030	3.000	1.030
2016	2.100	1.041	2.600	1.000	3.100	1.061	3.100	1.061
2017	2.000	1.061	2.700	1.000	3.200	1.093	3.200	1.093
2018	2.200	1.083	2.800	1.028	3.300	1.126	3.300	1.126
2019	2.100	1.104	2.800	1.056	3.400	1.160	3.400	1.160
2020	2.200	1.126	2.900	1.085	3.500	1.195	3.500	1.195
2021	2.200	1.148	2.900	1.114	3.500	1.230	3.500	1.230
2022	2.200	1.170	2.900	1.143	3.500	1.265	3.500	1.265
2023	2.200	1.192	2.900	1.172	3.500	1.300	3.500	1.300
2024	2.200	1.214	2.900	1.201	3.500	1.335	3.500	1.335
2025	2.200	1.236	2.900	1.230	3.500	1.370	3.500	1.370

2021 - 2025 Rates need to be updated

Note: Lookups for the Escalation Tab are done from the table below (which is linked to the table above)

		Tab are done from	the table below (v
Industry	FY	Rate	Index
Nuclear	2011	2.000	1.000
Nuclear	2012	1.900	1.000
Nuclear	2013	1.900	1.000
Nuclear	2014	2.000	1.000
Nuclear	2015	2.000	1.020
Nuclear	2016	2.100	1.041
Nuclear	2017	2.000	1.061
Nuclear	2018	2.200	1.083
Nuclear	2019	2.100	1.104
Nuclear	2020	2.200	1.126
Nuclear	2021	2.200	1.148
Nuclear	2022	2.200	1.170
Nuclear	2023	2.200	1.192
Nuclear	2024	2.200	1.214
Nuclear	2025	2.200	1.236
Scientific & Labor	2011	2.300	1.000
Scientific & Labor	2012	2.200	1.000
Scientific & Labor	2013	2.400	1.000
Scientific & Labor	2014	2.500	1.000
Scientific & Labor	2015	2.600	1.000
Scientific & Labor	2016	2.600	1.000
Scientific & Labor	2017	2.700	1.000
Scientific & Labor	2018	2.800	1.028
Scientific & Labor	2019	2.800	1.056
Scientific & Labor	2020	2.900	1.085
Scientific & Labor	2021	2.900	1.114
Scientific & Labor	2022	2.900	1.143
Scientific & Labor	2023	2.900	1.172
Scientific & Labor	2024	2.900	1.201
Scientific & Labor	2025	2.900	1.230
Administration Bu	2011	2.600	1.000
Administration Bu	2012	2.400	1.000
Administration Bu	2013	2.800	1.000
Administration Bu	2014	3.000	1.000
Administration Bu	2015	3.000	1.030
Administration Bu	2016	3.100	1.061
Administration Bu	2017	3.200	1.093
Administration Bu	2018	3.300	1.126
Administration Bu	2019	3.400	1.160
Administration Bu	2020	3.500	1.195
Administration Bu	2021	3.500	1.230
Administration Bu	2022	3.500	1.265
Administration Bu	2023	3.500	1.300
Administration Bu	2024	3.500	1.335
Administration Bu	2025	3.500	1.370
Remediation, Dec	2011	2.900	1.000
Remediation, Dec	2012	2.400	1.000
Remediation, Dec	2013	2.900	1.000
Remediation, Dec	2014	3.000	1.000
Remediation, Dec	2015	3.000	1.030
Remediation, Dec	2016	3.100	1.061
Remediation, Dec		3.200	1.093
Remediation, Dec		3.300	1.126
Remediation, Dec		3.400	1.160
Remediation, Dec		3.500	1.195
Remediation, Dec		3.500	1.230
Remediation, Dec		3.500	1.265
Remediation, Dec		3.500	1.300
Remediation, Dec		3.500	1.335
Remediation, Dec		3.500	1.370
F			

#### **DEP AMI Benefit Details**

All benefits reflect the AMI meter deployment schedule at the time of the initial cost-to-complete analysis and savings were adjusted for inflation. In addition, the benefits align with the expected 15-year service life of the meters. Benefits are scaled up during deployment years based on the deployment schedule and benefits are scaled down as meters reach the end of their expected life.

#### **Reduced Meter Reading Costs**

Reduction in drive-by (AMR) and manual meter reading costs enabled by AMI remote reading functionality.

The calculated Meter Reading savings were derived from the DEP Meter Reading budget and reflect that the quantity of reads per meter reader will decrease as AMI is deployed. Thus contract meter read costs are expected to increase per unit by approximately 25% as meter read volumes decrease and geographic dispersion increases. Actual budget impact modeled to lag installation by 6-12 months.

### Field Metering (Temp to Capital)

• Field Metering labor allocated to the deployment project will shift O&M dollars to capital project dollars.

#### **Reduced Meter Operations Costs**

- Reduce testing/repairs during deployment years & eliminate costs of manual metering reading equipment (handheld maintenance, etc.)
- Comprised of 3 components:
  - Reduction in Meter Testing
  - o Reduction in Meter Repair Work
  - o Reductions in Meter Reading Equipment costs
- Benefit derived from Meter Operations budget and expected Meter Reading Equipment costs.

#### **Customer Order Cost Reduction**

- Reduced customer order field visits for disconnect/reconnect and succession reads as these tasks are automated via AMI Remote Order Fulfillment (ROF) functionality
- Drivers:
  - Off-cycle read orders performed remotely

Disconnects/reconnects performed remotely

#### Inputs:

- Utilized average annual remote capable customer orders based on based on 2year completed order volumes by order type.
- Unit order cost (truck roll) was based on 2016 Contract Pricing and 2016 & 2017
   YTD average cost by order type.
- Impact was modeled to lag installation by at least 6 months to allow for meter certification and network optimization

#### Variables:

- # average annual remote capable orders completed by contractors
- # average annual remote capable orders completed by employees
- % of total meters with Remote Disconnect Switch (RDS) based on meter form quantities in scope
- o % of AMI eligible meters within total meter population
- o % of historical ROF success rates
- Customer Orders overtime budget

#### Customer Order Cost Reduction (DNP)

 Reduced customer order field visits for non-pay disconnect (NPD) assuming that customer notification regulations can be changed by 2019, allowing for non-pay disconnect orders to be automated via AMI Remote Order Fulfillment (ROF) functionality.

#### • Drivers:

Non-pay Disconnects performed remotely

#### Inputs:

- Utilized average annual remote capable NPD orders based on based on 2-year completed order volumes by order type.
- Unit order cost (truck roll) was based on 2016 Contract Pricing and 2016 & 2017
   YTD average cost by order type.
- Impact was modeled to lag installation by at least 6 months to allow for meter certification and network optimization

#### Variables:

- # average annual remote capable NPD orders completed by contractors
- # average annual remote capable NPD orders completed by employees
- % of total meters with Remote Disconnect Switch (RDS) based on meter form quantities in scope
- o % of AMI eligible meters within total meter population
- % of historical ROF success rates
- Customer Orders overtime budget

#### Cellular Cost Reduction (SSN Access Points)

- Reduced monthly cellular costs resulting from the removal and decommissioning of Silver Springs Network (SSN) Access Points (AP's)
- Utilized average monthly cellular costs based on 2-year billing history actuals for SSN Access Points
- Variables:
  - Average monthly cellular costs associated with SSN AP's
  - o # SSN AP's
  - Projected removal schedule

#### Reduced Restoration Costs – OK on Arrival:

- Reduced truck rolls required to verify voltage to meter due to ability to remotely verify
- Monthly trouble orders resulting in "ok on arrival" were queried from DOMS (2016)
- Assessed trouble orders resulting in "ok on arrival" by Contractor v. Companycompleted orders
- Average unit order cost (truck roll) was based on 2016 Contract Pricing, 2017 Level 1 company labor rate, 2017 Company Fleet rate, and Company v. Contractor-completed orders.
- \$ Savings = Average yearly orders X % reduction X Average Unit Cost per order X inflation % X benefit realization %
- Assumed: 90% reduction, \$54.61/order average for labor & fleet
- Impact was modeled to lag installation by at least 6 months to allow for meter certification and network optimization

#### Reduced Restoration Costs – Major Storms:

- Reduced truck rolls required to verify voltage to meter due to ability to remotely verify.
- This benefit was scaled from an AMI project model based on previous AMI deployments. The benefit was allocated on a per meter basis, then multiplied by the number of AMI meters planned for DEP.
- The benefit model included:
  - Trouble orders resulting in "ok on arrival" queried from DOMS
  - \$ Savings = ((Labor Cost + Outside Labor Costs) / Number Days Storm Lasted)
     X Days reduced by AMI X Benefit Realization %
  - Assumed: ½ day reduction, 3 year average actual labor costs

#### Miscellaneous O&M Savings

- Includes nominal amounts to represent other enabling benefits such as :
  - Improved vegetation management (voltage sag data from meters)

- Reduced customer calls (e.g. reduce repeat calls for start service and reconnect non-pay due to Remote Order Fulfillment functionality and scheduling capabilities)
- Reduced estimated bills

#### Miscellaneous Capital Savings

- Includes nominal amounts to represent other enabling benefits such as:
  - o Improved asset management (aggregate meter data to identify over/under loaded distribution transformers, and stress points in the grid)
  - o Ability to leverage meter Volt/Var data to improve placement of capacitor banks

#### Non-technical Loss Reduction:

- This benefit item represents expected revenue capture during and after the AMI deployment as a result of the increased ability to identify cases of non-performing or under-performing ("slow/stuck") meters from registration erosion, power theft and pilferage by way of either direct tapping, manipulating, or bypassing the meter, non-reading of meters, and misconfigured equipment and installation errors such as miswiring, incorrect application of multiplying factors, and defects in CT & PT circuitry.
- Identification of meter or usage irregularities through data analytics and field investigations within operations and during deployment
- Variables:
  - DEP Annual Revenues
  - Revenue Leakage Percentage "Non-Technical Line Loss": 2% (From EPRI 1016049: Advanced Metering Infrastructure Technology, Limiting Non-Technical Distribution Losses in the Future)
  - AMI Enabled Identification: 50% (Potential revenue erosion to be identified by AMI deployment and current analytics capabilities. Further advanced analytics initiatives required to identify remaining 50%. Based on assumptions of the Duke Energy Analytics and Revenue Protection team)
  - AMI Recovery Gain: 80% (Potential recovery gain)
  - Collection Percentage (Amount to be collected from identified revenue erosion through corrective action and back-billing): 60%
  - Benefit Realization (based on the deployment rate)
- \$ Savings = Annual Revenue X Non-Technical Line Loss % X AMI Enabled Identification X
   AMI Recovery Gain X Collection % X Benefit Realization %

#### Reduced Legacy Meter Failures:

• Full cost of new meter failures captured in project costs. This is full benefit of reduced meter failures due to deployment of new AMI meters (old meters vs. new AMI meters).

- Inputs:
  - 3-year average meter failures in DEP by failure reason was provided by the Metering Services team
  - Cost of average fully burdened AMR meter: \$34.14 + 15% material adders = \$39.26
  - Average installation labor cost = \$25
  - o Material cost inflation assumed at 1%, Labor inflation assumed at 3%
  - o Growth in Failure Rate of old meters assumed at 0.03%
- \$ Savings = ((Cost of meter X (1+Material Inflation)) + (Cost of installation X (1+Labor Inflation))) X (annual failure rate X (1+Failure Growth Rate)) X Benefit Realization %

#### DRAFT 6-26-2017

DEP AMI Benefits	2017	2018	2019	2020	2021	2022	2023	2024
Meter Reading Cost Reduction	-	-	400,000	850,000	3,120,000	3,213,600	3,310,008	3,409,308
Field Metering (Temp to Capital)	-	975,000	1,400,000	1,400,000	-	-	-	-
Reduced Meter Operations Costs	-	25,000	100,000	100,000		-	-	-
Consumer Order Cost Reduction (e.g. disconnects & reconnects)		128,428	1,516,821	2,906,653	3,704,893	3,854,586	3,970,223	4,089,330
Consumer Order Cost Reduction (Non-Pay Disconnects)	-	-	•	734,924	936,753	974,602	1,003,840	1,033,955
Cellular Cost Reduction (SSN Access Points)	-	-	14,715	58,860	117,720	121,252	124,889	128,636
Outage Restoration Cost Reduction - OK on Arrival	-	50,672	224,426	430,062	548,168	570,316	587,426	605,048
Outage Restoration Cost Reduction - Major Storms	-	60,000	293,550	810,900	981,000	1,010,430	1,040,743	1,071,965
Miscellaneous O&M Savings (e.g. Call Center)	-	35,206	372,771	873,113	1,058,007	1,089,747	1,122,440	1,156,113
Miscellaneous Capital Savings	-	11,735	124,257	291,038	352,669	363,249	374,147	385,371
Non-Technical Loss Reduction	- 1	1,679,758	7,259,075	13,572,782	16,880,299	17,136,061	17,221,742	17,307,850
Reduced Legacy Meter Failures	-	13,089	57,303	108,559	139,333	143,351	147,652	152,081
Total Benefit	-	2,978,888	11,762,918	22,136,890	27,838,842	28,477,194	28,903,108	29,339,658

Savings reflect AMI deployment schedule at time of business case development (May 2017)

Average annual unit costs and volumes are based on DEP-specific data

3% labor inflation applied annually unless otherwise noted

Benefits do not include customer programs enabled by AMI (Enhanced Customer Solutions)

Benefits align with the expected 15-year service life of the meters. Benefits are scaled up during deployment years based on the deployment schedule and scaled down as meters reach the end of their expected life.

2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	Total
3,511,587	3,616,935	3,725,443	3,837,206	3,952,323	4,070,892	4,193,019	4,318,810	3,858,357	2,192,148	416,008	-	51,995,645
-	-	-	-	-	-	-	-	-	-	-	-	3,775,000
-	-	-	-	-	-	-	-	-	-	-	-	225,000
4,212,010	4,338,370	4,468,521	4,602,577	4,740,654	4,882,874	5,029,360	5,180,241	4,627,945	2,629,395	498,985	•	65,381,865
1,064,974	1,096,923	1,129,831	1,163,725	1,198,637	1,234,596	1,271,634	1,309,783	1,170,140	664,822	126,164	-	16,115,303
132,495	136,470	140,564	144,781	149,124	153,598	158,206	162,952	145,579	82,711	15,696	-	1,988,247
623,200	641,896	661,153	680,987	701,417	722,459	744,133	766,457	684,741	389,040	73,829	-	9,705,429
1,104,124	1,137,248	1,171,365	1,206,506	1,242,701	1,279,982	1,318,382	1,357,933	1,213,156	689,262	130,802	-	17,120,052
1,190,796	1,226,520	1,263,316	1,301,215	1,340,252	1,380,459	1,421,873	1,464,529	1,308,387	743,368	141,070	-	18,489,182
396,932	408,840	421,105	433,738	446,751	460,153	473,958	488,176	436,129	247,789	47,023		6,163,061
17,394,390	17,481,361	17,568,768	17,656,612	17,744,895	17,833,620	17,922,788	18,012,402	15,701,413	8,704,326	1,611,742	-	258,689,884
156,644	161,343	166,184	171,169	176,304	181,593	187,041	192,652	172,112	97,787	18,557	-	2,442,755
29,787,151	30,245,906	30,716,249	31,198,518	31,693,058	32,200,227	32,720,394	33,253,936	29,317,960	16,440,648	3,079,877	•	452,091,422

#### **DEP AMI Benefit Realization**

Meters in Scope	1,555,000
Total Meters	1,563,000
Start	Q3 2016
End	Q2 2019

Data as of 5/9/2017, SGDB

	2017	2018	2019	2020	2021	2022
AMI Installs	_	412,500	569,500	573,000	-	-
Cumulative	-	412,500	982,000	1,555,000	1,555,000	1,555,000
% per Year	0%	26.5%	36.6%	36.8%	-	-
% Cumulative	0%	26.5%	63.2%	100%	100%	100%
Opportunity	0%	13.3%	44.8%	82%	100%	100%
Certified	0%	12.8%	43.6%	80.2%	99.3%	100.0%
Realization	0%	10%	43%	80%	99%	100%

Certification	Q1 2017	Nov 16 -Apr 1	Q3-Q4 2016
Actuals	During Q	6 month	2Q Prev
DEC AMI	92.2%	96.1%	98.9%

<sup>\*</sup>Based on DEC deployment stats as of 5/1/17

Scale Down	2032	2033	2034	2035	2036	2037
% End of Life	0%	26.5%	36.6%	36.8%	•	-
% Cumulative	0%	26.5%	63.2%	100%	100%	100%
% Scale Down	100%	86.7%	55.2%	18.4%	0%	0%

Appendix C

REDACTED

Consumer Order Cost Reduction | Remote Order Fulfillment

REDACTED

#### Remote Disconnect Switch (RDS) Meter Forms

122	3,001
25	1,359,411
125 200	27,640
Total RDS	1,390,712
Total Meters	1,555,256
% RDS	89.42%
% Successful ROF	98,77%

HDS QT/ Total Meters based on Class 3 scope (data as of 3/17/2017)

#### Residential Meters in DEP

1,313,107
1,563,018
84.019
15.999

Octa as of 5/9/2017, SGDB

Exclusions
Contratana

Exhibit G

Exclusions	7,762
Total Meters	1,555,256
% Excluded	0.50%
% AMI Eligible	99.50%

Data as of 5/9, 2017, 5GDB

#### Remote Capable Order Volumes & Cost

Type	Employee	Contractor	Total	% Employee	% Contractor	Contractor Unit	Company Unit	Annual Cost	Potential Savings
DISCONNECT	805	84,563	85,368	0.9%	99.1%		\$54.84	\$746,865	\$664,514
RECONNECT	2,727	133,437	136,164	2.0%	98.0%		\$54.84	\$1,258,410	\$1,119,656
RNP	1,456	76,514	77,970	1.9%	98.1%		\$54.84	\$715,678	\$636,767
READ	1,228	5,035	6,263	19.6%	80.4%		\$54.84	\$109,184	\$108,639
CHK VOLTAGE	7,478	1	7,479	100.0%	0.0%		\$54.84	\$410,102	\$408,055
IDLE USAGE	121	2,009	2,130	5.7%	94.3%		\$54.84	\$23,330	\$23,214
TOTAL	13,815	301,559	315,374	4.4%	95.6%		\$54.84	\$3,263,570	\$2,960,846

DEF Contractor is Duke Customer Order Units - YE 2015, CDO Customer Orders Summary 2016

Kelliote Capable 1401	i-ray Disconnects								
Туре	Employee	Contractor	Total	% Employee	% Contractor	Contractor Unit	Company Unit	Annual Cost	Potential Savings
DNP	483	108,580	109,063	0.4%	99.6%		\$54.84	\$928,788	\$826,378

DEP Contractor vs Duke Customer Order Units - YE 2015, CDO Customer Orders Summary 2016

#### Overtime Budget 2016

Non-Pay	\$143,527
Avoidance	88%
Meter Orders	\$226,724
Avoidance	80%
Total	\$307.510

2016 Customer Orders Budget provided by Loretta Allen 7/18/2016
Avaidance based on Remate-Copable order volumes, ROF success rate, and AMI eligible scope

Savings	2016	2017	2018	2019	2020	2021	2022
At Full Scale	\$3,268,355	\$3,366,406	\$3,467,398	\$3,571,420	\$3,678,563	\$3,788,920	\$3,902,587
Successful ROF	\$3,228,155	\$3,324,999	\$3,424,749	\$3,527,492	\$3,633,317	\$3,742,316	\$3,854,586
Realization	0%	0%	4%	43%	80%	99%	100%
Total Benefit	\$0	\$0	\$128,428	\$1,516,821	\$2,906,653	\$3,704,893	\$3,854,586

3% inflation, 98% ROF success rate

ROF functionality will be available in mid-August 2018 with the MDW-CIM Phase 2 Go-Live (only 4.5 months of benefit in 2018)

DNP Potential	2016	2017	2018	2019	2020	2021	2022
At Full Scale	\$826,378	\$851,169	\$876,704	\$903,006	\$930,096	\$957,999	\$986,739
Successful ROF	\$816,214	\$840,700	\$865,921	\$891,899	\$918,656	\$946,215	\$974,602
Realization	0%	0%	4%	43%	80%	99%	100%
Enabled	0%	0%	0%	0%	80%	99%	100%
Total Benefit	\$0	\$0	\$0	\$0	\$734,924	\$936,753	\$974,602

Total effective to the control of th

Final Calculations

DayNecoun Benefit = Remote Capable Orders x Unit Cost x % ROS X % AMP Eligible Score X % ROF Success Rate X % Inflation X % Reviewton
Other Orders Remote Remote Capable Orders x Unit Cost x % AMP Eligible Score X % ROF Success Rate X % Inflation X % Reviewton

Other Orders Remote Remote Capable Orders x Unit Cost x % AMP Eligible Score X % ROF Success Rate X % Inflation X % Reviewton

Exhibit G REDACTED Appendix C

#### Outage | OK on Arrival

REDACTED

#### Customer Trouble Orders (CTO)

Customer measure cras	(0.0)			
OK on Arrival	10,010			
Resolved by DCC	12,861			
Total	22,871			

DCC Resolved Report 2016 (source: DOMS)

#### CTO-OK by Resource Type

Performer	Units	% Orders
Company	9,96	0 99.5%
Contractor	5	0.5%
Total	10,01	.0 100%

CDO Customer Orders Summary Dashboard 2016 (source: DOMS)

#### Average CTO Truck Roll / Order Cost

Cost Driver	Unit Cost
Company Labor	\$34.89
Company Fleet	\$19.95
Total Company	\$54.84
Contractor	
Avg Unit Cost	\$54.61

Level 1 Labor Rate provided by Amy Futrell 5/12/2017

Fleet Unit Order Cost: Customer Orders Process Reporting Dashboard 2017

#### Avoided CTO Truck Rolls with AMI

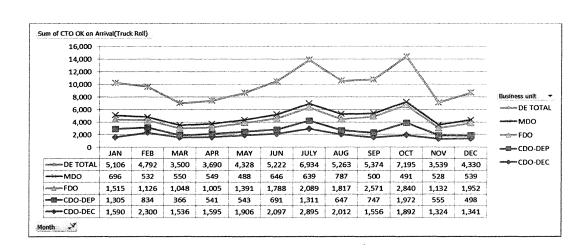
Total CTO-OK	10,010
% Avoided	90%
Truck Rolls Avoided	9,009

2017	2018	2019	2020	2021	2022
\$491,960	\$506,719	\$521,920	\$537,578	\$553,705	\$570,316
0%	10%	43%	80%	99%	100%
\$0	\$50,672	\$224,426	\$430,062	\$548,168	\$570,316
	\$491,960 0%	\$491,960 \$506,719 0% 10%	\$491,960 \$506,719 \$521,920 0% 10% 43%	\$491,960         \$506,719         \$521,920         \$537,578           0%         10%         43%         80%	\$491,960         \$506,719         \$521,920         \$537,578         \$553,705           0%         10%         43%         80%         99%

3% inflation, 90% truck roll avoidance

#### **Final Calculations**

Reduced Restoration Costs (OK on Arrival) = Annual Trouble Orders Resulting in OK on Arrival x Average Unit Cost x % Avoidance X % Realization



Excluded from analysis

#### **Legacy Meter Failures**

Failure Volumes by Retirement Year	2012	2013	2014	2015	2016
MMR ONLY - BLADES HEATED	528	903	3610	4270	9904
MMR ONLY - OUT OF CALIBRATION	7	6	5	14	10
MMR ONLY - ERROR CODE	6	17	31	18	28
MMR ONLY - KWH WILL NOT RESET	12	15	20	37	32
MMR ONLY - LOOSE BOARD	20	10	20	26	18
MMR ONLY - HOT SOCKET BURNT TERMINAL	1448	1338	1589	1536	
MMR ONLY - GOOD MMR	for the beauti	લેક મુક્તમાં સામેલો <del>કે</del>	× × ×	hodest tops of	Sistematic C
MMR ONLY - NO POWER UP	641	709	1,267	1,607	1,192
MMR ONLY - NO TEST PULSE	6	16	22	21	20
MMR ONLY - FAULTY DISPLAY	80	91	223	285	244
MMR ONLY - BAD ERT	18	38	44	36	40
MMR ONLY - BASE CAPACITOR FAILURE	8	11	11	21	22
Total	798	913	1,643	2,065	1,606

Data provided by Jeff Dargan and Barry Harrington 8/5/2016

#### Unit Cost & Inflation

Avg MMR Meter	\$34.14
Material Adders	15%
Avg Fully Burdened Meter Cost	\$39.26
Install Labor	\$25.00
Material Inflation	1%
Labor Inflation	3%
Failure Rate Growth	0.03%

Meter cost provided by Jeff Chandler 5/11/2017

#### **Annual Meter Failures**

Average	2,000
Potential Saving at Full Scale	128,522
A Ad-ta- Call de de de Metil O-	

Average Meter Failures provided by Nabil Benwahoud 5/10/2017

Savings	2017	2018	2019	2020	2021	2022
Materials	\$78,546	\$79,355	\$80,172	\$80,998	\$82,675	\$83,526
Labor	\$50,015	\$51,530	\$53,092	\$54,701	\$58,066	\$59,825
Potential	\$128,561	\$130,885	\$133,264	\$135,698	\$140,740	\$143,351
Realization	0%	10%	43%	80%	99%	100%
Total Benefit	\$0	\$13,089	\$57,303	\$108,559	\$139,333	\$143,351

3% inflation, 90% truck roll avoidance

#### **Final Calculation**

Reduced Legacy Meter Failures = (Meter Cost + Install Labor) X % Inflation X Average Annual Failures X Failure Growth Rate X % Realization

#### **Non-Technical Line Loss Reduction**

#### **Inputs & Assumptions**

mpacs a Assamptions	
Annual Revenue <sup>1</sup>	\$3,500,000,000
Non-Technical Line Loss <sup>2</sup>	2%
AMI Enabled Identification <sup>3</sup>	50%
Recovery Gain <sup>4</sup>	80%
Collection Rate <sup>5</sup>	60%
Applicable Meters <sup>6</sup>	99.5%
Load Growth	0.5%

<sup>&</sup>lt;sup>1</sup> 2016 DEP Revenues

<sup>&</sup>lt;sup>6</sup> Meters to be deployed of total population

Savings	2017	2018	2019	2020	2021	2022
Full-Scale Potential	\$16,714,012	\$16,797,582	\$16,881,569	\$16,965,977	\$17,050,807	\$17,136,061
Realization	0%	10%	43%	80%	99%	100%
Total Benefit	\$0	\$1,679,758	\$7,259,075	\$13,572,782	\$16,880,299	\$17,136,061

#### **Final Calculation**

Non-Technical Line Loss Reduction = Annual Revenue X % Non-Technical Line Loss X % AMI Enabled Identification X % Recovery Gain X % Collection X Applicable Meters X Load Growth X % Realization

<sup>&</sup>lt;sup>2</sup> EPRI 1016049: Advanced Metering Infrastructure Technology, Limiting Non-Technical Distribution Losses in the Future

<sup>&</sup>lt;sup>3</sup> Potential revenue erosion to be identified by AMI deployment and current AMI analytics, RevPro 5-Year Plan, based on industry studies

<sup>&</sup>lt;sup>4</sup> Potential Recovery Gain

<sup>&</sup>lt;sup>5</sup> Amount to be collected from identified revenue erosion through corrective action and back-billing

Exhibit G

#### Appendix C

#### **Cellular Cost Reduction | SSN Access Points**

#### **Inputs & Assumptions**

SSN Access Points Installed	331
Active Access Points	327
Avg Monthly Cellular Cost	\$30
Avg Annual Cellular Cost	\$360

Access Points: Data as of 3/8/2017 (Source: SSN Utility IQ System, queried by Gary Kubousek)

#### SSN Cellular Invoices | Actuals

2015 Total	\$126,485
2016 Total	\$115,806
Avg Monthly Cost	\$10,095
Avg Monthly Unit Cost	\$30.87
Avg Unit Cost Rounded	\$30

Silver Springs AMI Usage & Cost Data 2015-2017 based on cellular invoices (provided by Anne Conners 3/24/2017)

AP Removal Schedule	2017	2018	2019	2020	2021	2022
Qty Removed	-	25	100	175	27	-
% Removed	0%	8%	31%	54%	8%	0%
% Cumulative	0%	8%	38%	92%	100%	100%
Opportunity	0%	4%	27%	92%	100%	100%
Benefit Realization	0%	0%	12.5%	50%	100%	100%

Savings	2017	2018	2019	2020	2021	2022
Full-Scale Potential	\$117,720	\$117,720	\$117,720	\$117,720	\$117,720	\$121,252
Realization	0%	0%	13%	50%	100%	100%
Total Benefit	\$0	\$0	\$14,715	\$58,860	\$117,720	\$121,252

3% inflation applied beginning in 2022 assuming cellular contract pricing to remain flat until renegotiation is required

#### **Final Calculation**

Cellular Cost Reduction (SSN AP) = Average Annual Cellular Cost X Active SSN Access Points X % Realization

#### Exhibit G

Appendix C

#### **Metering Benefits**

Savings	2017	2018	2019	2020	2021	2022
Meter Reading	\$0	\$0	\$400,000	\$850,000	\$3,120,000	\$3,213,600
Metering (Temp to Capital)	\$0	\$975,000	\$1,400,000	\$1,400,000	\$0	\$0
Meter Operations	\$0	\$25,000	\$100,000	\$100,000	\$0	\$0

Savings provided by Everett Greene (Director of Meter Reading) and Nabil Benwahoud (Director of Field Metering) 5/10/2017

Savings derived from Meter Reading and Field Metering budgets and reflect that the quantity of reads per meter reader will decrease as AMI is deployed Assumes contractor meter read costs are expected to increase per unit by approximately 25% as meter read volumes decrease and geographic dispersion increases Actual Meter Reading budget impact modeled to lag installation by 6-12 months

3% inflation applied beginning in 2021

#### CERTIFICATE OF SERVICE

I certify that a copy of Correction to 2017 Smart Grid Technology Plan Update of Duke Energy Progress, LLC, in Docket No. E-100, Sub 147, has been served by electronic mail, hand delivery or by depositing a copy in the United States mail, postage prepaid to the following parties of record:

David Drooz
Lucy Edmondson
Robert Gillam
Dianna Downey
Public Staff
North Carolina Utilities Commission
4326 Mail Service Center
Raleigh, NC 27699-4326
david.drooz@psncuc.nc.gov
lucy.edmondson@psncuc.nc.gov
bob.gillam@psncuc.nc.gov
dianna.downey@psncuc.nc.gov

Brett Breitschwerdt McGuire Woods, LLP 434 Fayetteville Street, Suite 2600 Raleigh, NC 27601 bbreitschwerdt@mcguirewoods.com

Horace Payne
Dominion North Carolina Power
PO Box 26532
Richmond, VA 23261
horace.p.payne@dom.com

Daniel Whittle Environmental Defense Fund 4000 Westchase Blvd., Ste. 510 Raleigh, NC 27607-3965 dwhittle@edf.org Charlotte A. Mitchell Law Office of Charlotte Mitchell PO Box 26212 Raleigh, NC 27611 cmitchell@lawofficecm.com

Sharon Miller Carolina Utility Customers Association Trawick Professional Center, Suite 210 1708 Trawick Road Raleigh, NC 27604 smiller@cucainc.org

Peter H. Ledford NC Sustainable Energy Association 4800 Six Forks Road, Suite 300 Raleigh, NC 27609 peter@energync.org

Bruce Burcat MAREC P.O. Box 385 Camden, DE 19934 marec.org@gmail.com

Lawrence L. Ostema Nelson Mullins Riley & Scarborough Bank of American Corp. Ctr., 42<sup>nd</sup> Fl. 100 North Tryon Street Charlotte, NC 28202 larry.ostema@nelsonmullins.com Ralph McDonald Warren Hicks Bailey & Dixon, LLP Counsel for CIGFUR PO Box 1351 Raleigh, NC 27602-1351 rmcdonald@bdixon.com whicks@bdixon.com

Christopher McKee US General Counsel Alevo 2321 Concord Parkway S Concord, NC 28027 Christopher.mckee@alevo.com

Gudrun Thompson Nadia Luhr **SELC** 601 W. Rosemary St., Ste. 220 Chapel Hill, NC 27516 gthompson@selcnc.org nluhr@selcnc.org

John Runkle Attorney 2121 Damascus Church Rd. Chapel Hill, NC 27516 jrunkle@pricecreek.com

Robert Page Crisp, Page & Currin, LLP 4010 Barrett Drive, Ste. 205 Raleigh, NC 27609-6622 rpage@cpclaw.com

Damon E. Xenopoulos Stone Mattheis Xenopoulos & Brew, PC 1025 Thomas Jefferson St., NW 8<sup>th</sup> Floor, West Tower Washington, DC 20007 dex@smxblaw.com

Grant Millin 48 Riceville Road, B314 Asheville, NC 28805 grantmillin@gmail.com

Christopher J. Blake Joseph Eason Nelson Mullins Riley & Scarborough, LLP 4140 Park Lane Avenue, Suite 200 Raleigh, NC 27622 chris.blake@nelsonmullins.com joe.eason@nelsonmullins.com

This is the 20<sup>th</sup> day of October, 2017.

By:

Lawrence B. Somers Deputy General Counsel **Duke Energy Corporation** P.O. Box 1551/NCRH 20 Raleigh, North Carolina 27602 Tel 919.546.6722

bo.somers@duke-energy.com