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VIA ELECTRONIC FILING

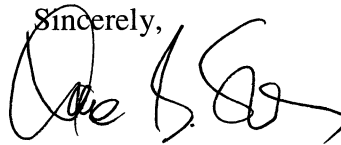
M. Lynn Jarvis
Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

**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.

Sincerely,

Lawrence B. Somers

Enclosures

cc: Parties of Record

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Oct 20 2017

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)	<i>A summary of the utility's strategy for evaluating and developing smart grid technologies.</i>

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 annually-funded 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, www.NCSmartGrid.org, 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)	<i>A description of how the proposed smart grid technology plan will improve reliability and security of the grid.</i>

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)	<i>For all smart grid technologies currently being deployed or scheduled for implementation within the next five years: (i) – (vii)</i>

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:

DEP AMI Capital Forecast	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:

DEP (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	<i>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.</i>

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 through 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	<i>For each pilot project or initiative currently underway or planned within the next two years to evaluate smart grid technologies: (i) – (v)</i>

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	<i>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.</i>

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

Customer Class	AMI Meters	AMR Meters	Walk-By & 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 Use & Other	2	437	0
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

Exhibit A

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.

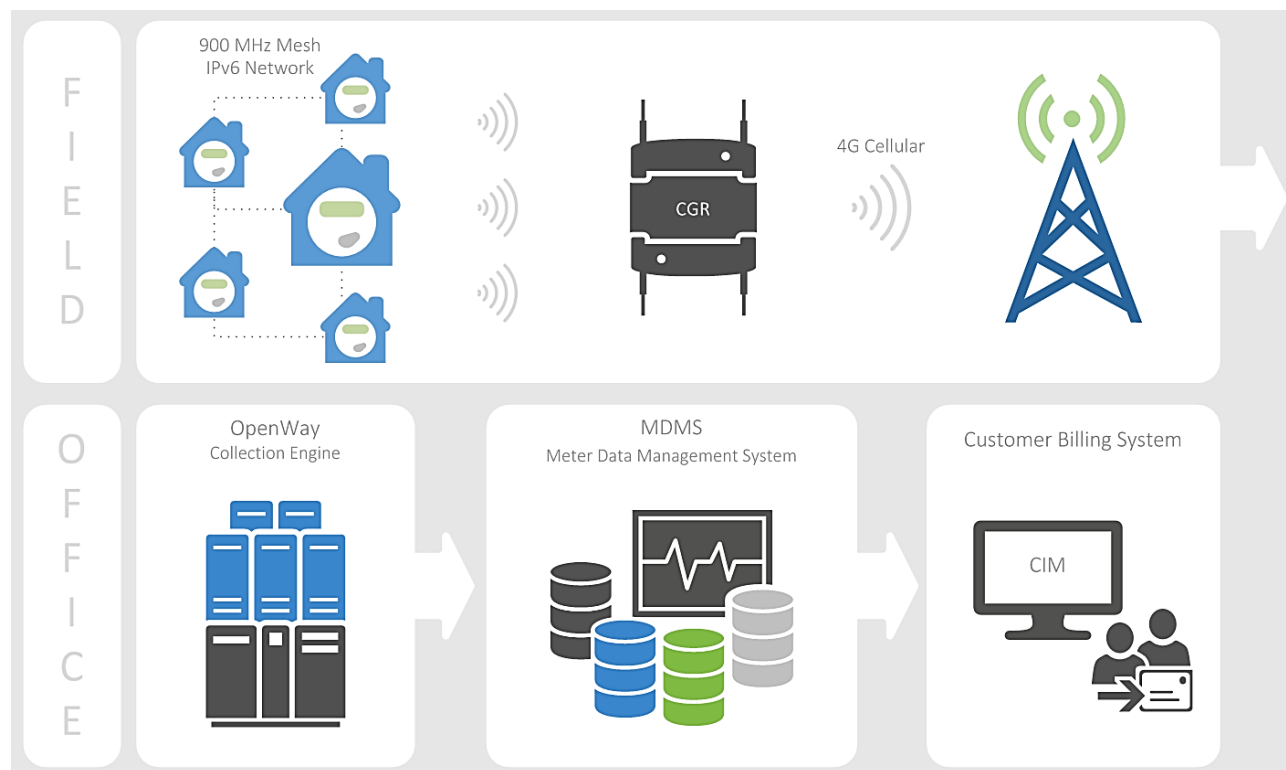
The net book value of the metering assets to be replaced in DEP as part of this project was approximately \$89.6MM as of December 2016, and is expected to be approximately \$77.2MM at year-end 2017.

Project Description

Business Unit	Grid Solutions / Distribution Operations / Customer Solutions			
Executive Sponsors	Lee Mazzocchi / Lloyd Yates / Sasha Weintraub / David Fountain			
Project Location	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:	\$0
Program Cost Estimate Class	Class 3			
Program Profile Risk Matrix	Green III			

Exhibit A

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 AMI Duke Energy's 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

Exhibit A

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
 - Q4 2017 - Q1 2018

Advanced Metering Infrastructure Deployment

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

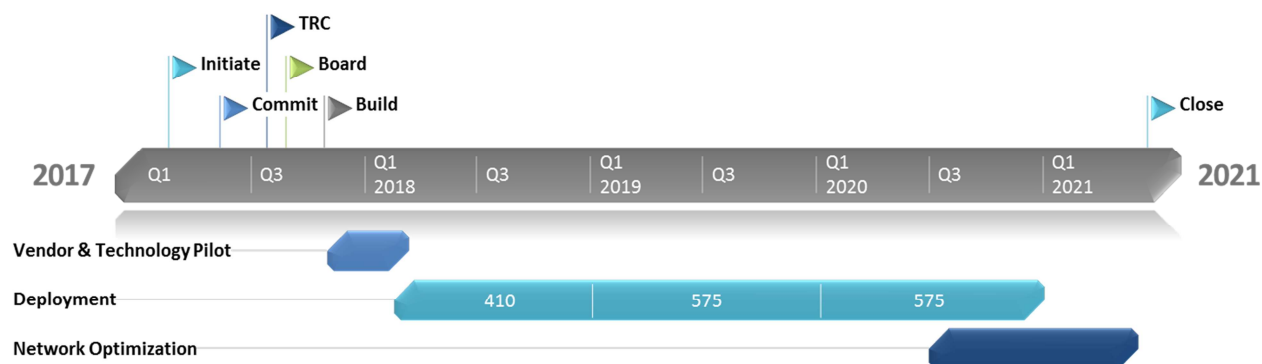
Exhibit A

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

Exhibit A

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

¹ Material costs were calculated using the contractual pricing that has already been established with the vendor.

² Project labor and installation costs are based on experience from past and on-going AMI deployments projects.

³ Overhead allocations are based on forecasted staffing needs and the total cost of expected projects that these charges would be distributed amongst.

Exhibit A

⁴ 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.

⁵ There will be no AFUDC, as AMI meters are placed in-service and considered used and useful upon installation.

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	2019	2020	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	\$ 4.72	\$ 73.55	\$ 100.73	\$ 97.06	\$ 12.71	\$ 85.82	\$ 374.64

		Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-20	Total
Total Benefits (\$ in Millions)		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 A

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's 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. Proactive auditing of contractors and Duke resources will be performed over the life of the project.
Installation Vendor Pricing Bid is not similar to DEC or DEI AMI RFQs	Financial	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. 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) Meters	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. Detailed design will be obtained prior to deployment. Appropriate contingency is included in cost estimate.
Resource Constraint (Meter Installation Vendors)	Financial	If one of the installation vendors is unable to adequately staff or meet deployment expectations, then the project deployment schedule could be delayed. 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.
Delay in MDM-CIM Integration project	Financial	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. 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.

Exhibit A

Resource Constraint (Availability of Skilled Mitigation Resources)	Financial	<p>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.</p> <p>Resource constraint probability is low. Contingency plan includes utilizing Itron resources for mitigation.</p>
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Stakeholder Discussion

Stakeholder	Discussion of Interest & Impact	Assessment
Customers	<ul style="list-style-type: none"> 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. The Enhanced Customer Solutions enabled by AMI will improve customer experience and satisfaction by offering increased choice, control, convenience, and transparency. Deployment methodology will leverage experience from predecessor AMI deployments, including approach to customer awareness and deployment information. 	F
Community	<ul style="list-style-type: none"> 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. AMI deployment will enable renewable energy customers to have increased visibility into their energy profile. 	F
Employees	<ul style="list-style-type: none"> 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. Impacted employee stakeholder groups have been consulted in development of this effort and will continue to be actively engaged throughout deployment. 	F
Shareholders	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. DEP plans to file an AMI opt-out tariff; however, the timing is contingent upon Commission approval of the DEC AMI opt-out tariff. 	N
Note: Favorable (F); Unfavorable (U); Neutral (N)		

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Appendix 1 ■ ECS Program

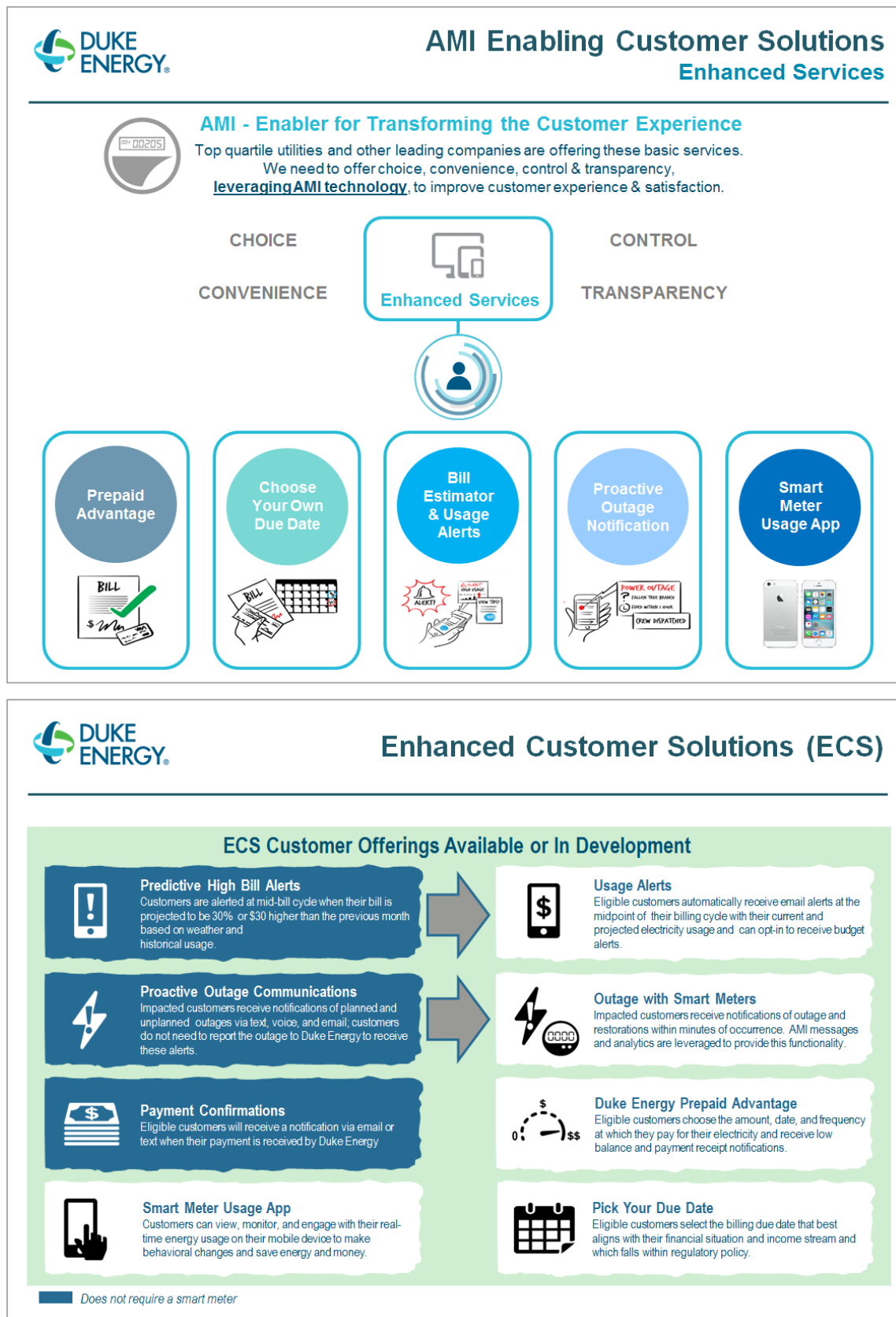


Exhibit A

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	0	15	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.

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



Grid Mod Cost Inputs - By Program and Initiative

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Asset Accounting 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	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	
Total Cost	2018	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036		
Capital Project Costs	\$ -	0.05	\$ 4.72	\$ 72.47	\$ 88.39	\$ 93.64	\$ 8.87	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 278.14	
Capital/ Recruiting Costs	\$ -	\$ -	\$ -	0.21	\$ 0.51	\$ 0.80	\$ 0.85	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
OBM Program Costs	\$ -	\$ -	\$ -	0.02	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0.02	
OBM Recruiting Costs	\$ -	\$ -	\$ -	0.80	\$ 1.83	\$ 2.67	\$ 2.98	\$ 3.16	\$ 3.20	\$ 3.23	\$ 3.20	\$ 3.37	\$ 3.36	\$ 3.41	\$ 3.47	\$ 3.49	\$ 3.53	\$ 3.57	\$ 3.56	\$ 3.47	\$ 3.35	\$ 1.77	\$ 55.67
Total Capital	\$0.05	\$4.72	\$72.46	\$98.60	\$94.46	\$67.91	\$17.97	\$1.36	\$1.56	\$1.63	\$1.67	\$1.66	\$1.66	\$6.47	\$3.73	\$1.41	\$1.41	\$1.83	\$2.03	\$0.84	\$0.34	\$315.34	
Total OBM	\$0.00	\$0.00	\$0.07	\$1.80	\$2.62	\$2.98	\$3.16	\$3.20	\$3.24	\$3.20	\$3.32	\$3.36	\$3.41	\$3.43	\$3.46	\$3.50	\$3.57	\$3.56	\$3.47	\$3.38	\$1.77	\$55.69	
Total Annual Costs	\$0.05	\$4.72	\$72.53	\$100.73	\$97.06	\$121.71	\$24.23	\$4.54	\$4.80	\$4.91	\$4.88	\$5.02	\$5.19	\$9.90	\$7.22	\$4.90	\$4.98	\$5.39	\$5.50	\$4.19	\$1.61	\$371.03	

	Actuals	Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-20	Total
	2016	2017	2018	2019	2020	2021		
Total Cash (\$ in Millions)	\$ 0.05	\$ 4.72	\$ 72.47	\$ 89.39	\$ 90.64	\$ 8.87	\$	\$ 278.14
Capital Project Costs	\$ -	\$ -	\$ 0.21	\$ 0.31	\$ 0.80	\$ 0.95	\$ 35.16	\$ 37.43
Capital Program Costs	\$ -	\$ -	\$ 0.02	\$ -	\$ -	\$ -	\$ -	\$ 0.02
O&M Program Costs	\$ -	\$ -	\$ 0.05	\$ -	\$ -	\$ -	\$ -	\$ 0.05
O&M Recurring costs	\$ -	\$ -	\$ 0.05	\$ 1.63	\$ 2.62	\$ 2.90	\$ 60.60	\$ 68.94
Total Capital/	\$ 0.05	\$ 4.72	\$ 72.68	\$ 89.69	\$ 91.44	\$ 7.73	\$ 35.16	\$ 315.65
Total O&M	\$ -	\$ -	\$ 0.87	\$ 1.63	\$ 2.62	\$ 2.90	\$ 60.60	\$ 68.96
Total Annual Costs	\$ 0.05	\$ 4.72	\$ 73.55	\$ 100.73	\$ 97.06	\$ 12.71	\$ 55.62	\$ 374.64

Project Deployment and On-going Capital Costs

	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	0	Check	
	Actuals																						
Project Deployment Capital Costs:																							
Field Technology	\$	(5,913)	\$	4,183,363	\$	69,083,658	\$	94,432,120	\$	89,495,939	\$	1,506,921	\$	-	\$	-	\$	-	\$	-	\$	256,717,915	
Communications	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	
Eng. & Other Services	\$	5,513	\$	537,752	\$	3,403,785	\$	1,968,343	\$	4,149,011	\$	7,362,599	\$	-	\$	-	\$	-	\$	-	\$	15,425,104	
Back Office Systems	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	
Indirect	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	
Other	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	
Total	\$49,426	\$4,721,116	\$72,467,443	\$98,390,463	\$93,644,950	\$8,868,521	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$270,168,010	\$278,142,460	

	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year	Check
	Actuals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Project On going Capital Costs																						
Road Technology	\$ -	\$ -	\$ 213,690	\$ 511,301	\$ 800,241	\$ 863,119	\$ 1,069,594	\$ 1,343,834	\$ 3,557,977	\$ 1,631,750	\$ 1,657,501	\$ 1,661,184	\$ 8,184,702	\$ 6,473,498	\$ 3,728,707	\$ 1,407,188	\$ 1,410,873	\$ 1,828,915	\$ 2,025,457	\$ 842,466	\$ 37,212,007	
Communications	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Eng. & Other Services	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Back Office Systems	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Interest	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Total	\$0	\$0	\$213,690	\$511,301	\$800,241	\$863,119	\$1,069,594	\$1,343,834	\$3,557,977	\$1,631,750	\$1,657,501	\$1,661,184	\$8,184,702	\$6,473,498	\$3,728,707	\$1,407,188	\$1,410,873	\$1,828,915	\$2,025,457	\$842,466	\$37,212,007	\$37,211,964

	Actuals 2016	Year 1 2017	Year 2 2018	Year 3 2019	Year 4 2020	Years 6-30	Total
Total Cost							
Total Capital Program Costs	\$ -	\$ -	\$ 72	\$ 88	\$ 94	\$ 9	\$ 278
Total Capital Recurring Costs	\$ 0	\$ 5	\$ 0	\$ 1	\$ 1	\$ 36	\$ 37
Total O&M Program Costs	\$ -	\$ 0	\$ 0	\$ -	\$ -	\$ 0	\$ 0
Total O&M Recurring Costs	\$ -	\$ -	\$ 1	\$ 2	\$ 3	\$ 50	\$ 56
Total Capital	\$0	\$5	\$71	\$89	\$94	\$45	\$315
Total O&M	\$0	\$1	\$2	\$3	\$3	\$56	\$65
Total Annual Costs	\$0	\$5	\$74	\$101	\$97	\$95	\$373



Program Benefit Inputs

	Initiative Name	Title
Initiative 1	AMI/ Smart Meter	DEP AMI

Annual Benefits (\$)					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
			Expense Reduction		\$ -	\$ 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 economic 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 Millions)		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

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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	Total 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
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 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
Costs of Communication Equipment	Material costs of the AMI communication devices, including Cisco Connected Grid Routers (CGRs) and Iron Range Extenders (RE), as well as material adders, 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	Definition
Field Tools	Optical probes required for AMI meters
Contingency (Estimated Uncertainty)	Contingency representing uncertainty in estimate components (field tools)

Capital - Recurring Costs	
Description	Definition
Annual Costs assoc. with Comm Failures (Materials)	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 communication equipment and material adders.
Annual Costs assoc. with Comm Failures (Labor)	Labor costs associated with communication device failures based on expected failure rates and replacement of equipment at the assets' end of life. Includes installation labor, testing labor, and labor escalation.
Annual Costs assoc. with Meter Failures & Growth (Materials)	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 equipment and material adders.
Annual Costs assoc. with Meter Failures (Labor)	Labor costs associated with meter failures and new customer meter growth based on expected failure rate and meter population growth. Includes cost of installation 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
Description of Effort:	Deploy AMI technologies in the DEP territories based upon the mesh solution
Project Ranking:	Green III
Estimate Purpose:	Commit Gate
Preparation Date (planned approval date):	17-May-17
Revision Number:	0
IPRS Number (from Reporting Team):	IPRS #317
Estimate Number (from Cost Est Log):	Est #336
Total Project Estimate	\$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)	



REDACTED

Grid Solutions
Duke Energy Progress
DEP
AMR to AMI Deployment
Class 2 - (5% to 15%)
COST ESTIMATE DETAIL

Issue Date: 05/17/17
Revision No:
IPRS No: IPRS #317
Estimate No: Est #336

Work Flow Phase WBS # / ID Task # / ID	Line Item Revision Number	DESCRIPTION	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 \$	EQUIPMENT \$	SUBCONT. \$	TOTAL	Spent to Date - For Reference Only	Contingency Percentage	Contingency Amount
Materials		Materials												176,548,097	21,508,768		198,056,865		3.39%	6,721,277
		Iron Meters				1,555,256														
		1S 200	Capital	All Other Departments	EA	3,661													3.00%	
		2S 200	Capital	All Other Departments	EA	1,359,411													3.00%	
		2S 320	Capital	All Other Departments	EA	64,525													3.00%	
		3S 20	Capital	All Other Departments	EA	29,441													3.00%	
		5S 20	Capital	All Other Departments	EA	9,166													3.00%	
		9S 20	Capital	All Other Departments	EA	31,189													3.00%	
		12S 200	Capital	All Other Departments	EA	27,640													3.00%	
		12S 320	Capital	All Other Departments	EA	21													3.00%	
		16S 320	Capital	All Other Departments	EA	30,202													3.00%	
Current DC rate is 3.82%		Cellular - Direct Connect Adder																		
		1S 200	Capital	All Other Departments	EA	232													3.00%	
		2S 200	Capital	All Other Departments	EA	50,791													3.00%	
		2S 320	Capital	All Other Departments	EA	3,195													3.00%	
		3S 20	Capital	All Other Departments	EA	1,703													3.00%	
		5S 20	Capital	All Other Departments	EA	810													3.00%	
		9S 20	Capital	All Other Departments	EA	1,805													3.00%	
		12S 200	Capital	All Other Departments	EA	36													3.00%	
		12S 320	Capital	All Other Departments	EA														3.00%	
		16S 320	Capital	All Other Departments	EA	785													3.00%	
		Meter Installations																		
Staffing Plan		Field Metering	Capital	All Other Departments	EA	103,126														
Subserv		Contractors	Capital	All Other Departments	EA	1,452,130														
		Electric Accessories	Capital	All Other Departments	LS	0.64%				159078269					1,021,282		1,021,282		5.00%	51,064
		The Electric Accessories line covers seals, retaining rings, Plexiglas covers, etc. for replacements. These are not covered in working stock - the project orders them specifically since the volumes are high.																		
		Sockets (for A and K based meters)	Capital	All Other Departments	EA	3,866			330.00					1,275,780			1,275,780		5.00%	63,769
		Connected Grid Routers (CGR)	Capital	All Other Departments	EA	3,675													5.00%	
Staffing Plan		Installs	Capital	All Other Departments	EA	3,675														
Staffing Plan		Mitigation installs	Capital	All Other Departments	EA	368														
		Range Extenders (RFRE)	Capital	All Other Departments	EA	10,000													5.00%	
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	All Other Departments	EA	15,043													5.00%	
		Other	Capital	All Other Departments	LS	2.00%				15432325					308,647		308,647		5.00%	15,432
		In addition to power cords and brackets, other communications accessories were approximately 2% of the range extender and CGR costs																		
0.38		Tools and Equipment				590,997														
		Misc. field issue (meter boxes, anchor sockets, etc.)	Capital	All Other Departments	70.00%	1				413698					413,698		413,698		5.00%	20,685
		Mitigation / Installation Tools	Capital	All Other Departments	20.00%	1				118199					118,199		118,199		5.00%	5,910
		Other	Capital	All Other Departments	10.00%	1				59100					59,100		59,100		5.00%	2,955
1.00		Miscellaneous				1,555,256														
		Printing	Capital	All Other Departments	43.00%	1				668780					668,780		668,780		5.00%	33,438
		Communications	Capital	All Other Departments	25.00%	1				388814					388,814		388,814		5.00%	19,441
		Office Supplies	Capital	All Other Departments	15.00%	1				233288					233,288		233,288		5.00%	11,664
		Personal Vehicles	Capital	All Other Departments	10.00%	1				155526					155,526		155,526		5.00%	7,776
		Postage	Capital	All Other Departments	5.00%	1				77763					77,763		77,763		5.00%	3,888
		Other	Capital	All Other Departments	2.00%	1				31105					31,105		31,105		5.00%	1,555
		O&M																		
		Optical Cables and Probes	O&M	All Other Departments	EA	100				150.00					15,000		15,000		5.00%	750
		Material Adders																		
AMI		Sales Tax	Capital	All Other Departments	PCT	7.00%				148530098					10,397,107		10,397,107		5.00%	519,655
		Working Stock	Capital	All Other Departments	PCT	5.50%													5.00%	
		Stores Loading (none for AMI meters directly shipped to Contractor)	Capital	All Other Departments	PCT	10.00%													5.00%	
		10,397,107																		
AMI		Sales Tax	Capital	All Other Departments	PCT	7.00%				10548171					738,372		738,372		5.00%	36,919
		Working Stock	Capital	All Other Departments	PCT	5.50%				11286543					620,760		620,760		5.00%	31,036
		Stores Loading (Duke installs)	Capital	All Other Departments	PCT	10.00%				11907303					1,190,730		1,190,730		5.00%	59,537
		2,549,862																		
CGR		Sales Tax	Capital	All Other Departments	PCT	7.00%				12932325					905,263		905,263		5.00%	45,263
		Working Stock	Capital	All Other Departments	PCT	5.50%				13837568					761,067		761,067		5.00%	38,053
		Stores Loading	Capital	All Other Departments	PCT	10.00%				14598655					1,459,866		1,459,866		5.00%	72,993
		3,126,196																		



Grid Solutions
Duke Energy Progress
DEP

AMR to AMI Deployment

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

Issue Date: 05/17/17
Revision No: IPRS #317
Estimate No: Est #336

Work Flow Phase WBS # / ID Task # / ID	Line Item Revision Number	DESCRIPTION	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 \$	EQUIPMENT \$	SUBCONT. \$	TOTAL	Spent to Date - For Reference Only	Contingency Percentage	Contingency Amount
RFRE	Sales Tax		Capital	All Other Departments	PCT	7.00%				2500000					175,000		175,000		5.00%	8,750
	Working Stock		Capital	All Other Departments	PCT	5.50%				2675000					147,125		147,125		5.00%	7,356
	Stores Loading		Capital	All Other Departments	PCT	10.00%				2822125					282,213		282,213		5.00%	14,111
		604,338																		
AMI Misc	Sales Tax		Capital	All Other Departments	PCT	7.00%				4458315					312,082		312,082		5.00%	15,604
	Working Stock		Capital	All Other Departments	PCT	5.50%				4770397					262,372		262,372		5.00%	13,119
	Stores Loading		Capital	All Other Departments	PCT	10.00%				5032769					503,277		503,277		5.00%	25,164
		1,077,731																		
Comm Acc	Sales Tax		Capital	All Other Departments	PCT	7.00%				1070370					74,926		74,926		5.00%	3,746
	Working Stock		Capital	All Other Departments	PCT	5.50%				1145296					62,991		62,991		5.00%	3,150
	Stores Loading		Capital	All Other Departments	PCT	10.00%				1208287					120,829		120,829		5.00%	6,041
		258,746																		
O&M	Sales Tax		O&M	All Other Departments	PCT	7.00%				15000					1,050		1,050		5.00%	53
	Working Stock		O&M	All Other Departments	PCT	5.50%				16050					883		883		5.00%	44
	Stores Loading		O&M	All Other Departments	PCT	10.00%				16933					1,693		1,693		5.00%	85
		3,626																		
NOTE:																				
Apply Working Stock to materials that require it (see 'Material Loader Rates' for guidance)																				
For Material / Equipment \$ - Estimated 'Stores Loading', 'Sales/Use Tax', 'Freight', and 'Escalation' should be included in Columns K-L also.																				
For Subcontract / Services \$ - Estimated 'Escalation' should be included in Column M also																				
For Labor \$ - Fully burdened Labor \$ (with Fringe, Incentive, Payroll Tax, Loader, and Escalation) should be included in Column J also																				
For Labor \$ - Estimated 'Meals & Travel' dollars should be included into Column J as well																				
Estimating Contingency percentage should be entered in Column U.																				



**Grid Solutions
Duke Energy Progress
DEP
AMR to AMI Deployment**

Issue Date: 05/17/17
Revision No:
IPRS No: IPRS #317
Estimate No: Est #336

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

[illegible]

User Notes:

1. This worksheet is linked to the date information which comes from the **Title Block** worksheet and to the Labor Loader Rates tab.
2. All data fields that are "blue" font, must be keyed in manually. All other fields are formulas.
3. In Column H, input "Unburdened" hourly rates, and ensure Column I properly calculates "Fully Burdened" rates for "Internal" resources based on applicable Labor burdens (see cells starting in G50, H50 & I50 on tab Labor Loader Rates for specific resources). For Overtime situations, add rows and adjust rates accordingly.
4. In Column P - BW, enter only whole hours (fractions of hours not permitted). FTE work hours calculations in Row 7 automatically adjust for company holidays through 2020 (update Holiday list sheet if your project extends beyond 2020).

Role	Job Family	Labor Class <i>(Home working, physical)</i>	Organization	Capital / O&M	IT&T/Telecom/All Other Departments	Unburdened Wage Rate	By Burdened Wage Rate	Estimated Hours	Estimated Labor \$	Estimated Expenses	Financial View Adder	Total Estimated Labor & Expenses	Jan-18	Aug-18	Sept-18	Oct-18	Nov-18	Dec-18	Jan-17	Feb-17
Project Management																				
Sr Project Manager		Internal Labor	Project Management	Capital	All Other Departments	\$ 63.08	\$ 91.02	99.120	7,945,541	-	-	7,945,541								
JM Business Analyst		Internal Labor	Project Management	Capital	All Other Departments	\$ 72.69	\$ 105.89	8,080	853,980	-	-	853,980								
Field Services PM		Internal Labor	Project Management	Capital	All Other Departments	\$ 45.59	\$ 75.06	7,960	621,370	-	-	621,370								
Communications Network		Internal Labor	Project Management	Capital	All Other Departments	\$ 44.68	\$ 70.80	7,080	530,052	-	-	530,052								
Customer Engagement		Internal Labor	Project Management	Capital	All Other Departments	\$ 44.68	\$ 72.81	4,720	353,368	-	-	353,368								
AMI Data		Internal Labor	Project Management	Capital	All Other Departments	\$ 37.12	\$ 62.19	6,480	403,021	-	-	403,021								
AMI Data Supervisor		Internal Labor	Project Management	Capital	All Other Departments	\$ 46.59	\$ 74.05	1,980	153,703	-	-	153,703								
Business Process Mgmt		Internal Labor	Project Management	Capital	All Other Departments	\$ 52.12	\$ 81.33	5,280	461,087	-	-	461,087								
Change Management		Internal Labor	Project Management	Capital	All Other Departments	\$ 52.12	\$ 81.33	6,392	558,195	-	-	558,195								
AMI Operator (Batteries Tech 1)		Internal Labor	Project Management	Capital	All Other Departments	\$ 38.17	\$ 62.58	1,320	73,361	-	-	73,361								
EDIS Postage		Internal Labor	Project Management	Capital	All Other Departments	\$ 28.62	\$ 49.53	1,320	65,509	-	-	65,509								
Meter Engineering Support		Internal Labor	Project Management	Capital	All Other Departments	\$ 44.68	\$ 73.95	2,440	197,634	-	-	197,634								
Utility Lab		Internal Labor	Project Management	Capital	All Other Departments	\$ 52.11	\$ 80.92	176	112,923	-	-	112,923	0.20							
Utility Route Analyst		Internal Labor	Project Management	Capital	All Other Departments	\$ 37.12	\$ 62.19	4,410	274,278	-	-	274,278	0.75							
Utility Route Supervisor		Internal Labor	Project Management	Capital	All Other Departments	\$ 52.12	\$ 81.33	548	51,348	-	-	51,348	0.10							
Migration Manager		Internal Labor	Project Management	Capital	All Other Departments	\$ 45.59	\$ 75.06	5,920	482,124	-	-	482,124	1.00							
Project Execution Office		Internal Labor	Project Management	Capital	All Other Departments	\$ 100.01	\$ 161.53	1,475	247,136	-	-	247,136	0.20							
System Staff (AMI)		Internal Labor	Project Management	Capital	All Other Departments	\$ 45.59	\$ 75.06	45	45,900	-	-	45,900	0.10							
Contractor Specialist		Internal Labor	Project Management	Capital	All Other Departments	\$ 41.59	\$ 69.68	5,600	380,231	-	-	380,231	0.00							
Contractor Specialist		Internal Labor	Project Management	Capital	All Other Departments	\$ 41.59	\$ 69.68	5,600	380,231	-	-	380,231	1.00							
Project Director		Internal Labor	Project Management	Capital	All Other Departments	\$ 79.53	\$ 132.92	4,240	563,570	-	-	563,570	0.25							
COO Manager		Internal Labor	Project Management	Capital	All Other Departments	\$ 44.68	\$ 72.81	1,722	128,915	-	-	128,915	0.25							
Project Management																				
Proj Controls Spec - First Analyst		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$ 65.20	36,764	2,177,792	-	-	2,177,792								
Maximo Support		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	1,944	1,944	-	-	1,944								
Customer Engagement		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	6,000	6,000	-	-	6,000								
Customer Engagement		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	5,360	5,360	-	-	5,360								
Customer Engagement		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	5,200	5,200	-	-	5,200								
AMI Data		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	5,200	5,200	-	-	5,200								
AMI Deployment Planner		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	2,040	2,040	-	-	2,040								
Schedule		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Project Management	Capital	All Other Departments	\$	\$	-	-	-	-	-								
Field Services																				
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 80.89	194,555	17,443,942	-	-	17,443,942								
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 82.15	6,400	589,776	-	-	589,776								
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 82.15	6,400	589,776	-	-	589,776								
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 82.15	6,080	560,287	-	-	560,287								
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 82.15	6,080	560,287	-	-	560,287								
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 82.15	5,720	527,112	-	-	527,112								
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 82.15	5,440	508,171	-	-	508,171								
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 82.15	4,880	449,704	-	-	449,704								
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 82.15	6,000	552,915	-	-	552,915								
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 82.15	6,680	623,628	-	-	623,628								
Distribution Service Tech	Field Migration	Internal Labor	Field Services	Capital	All Other Departments	\$ 55.00	\$ 82.15	5,560	512,368	-	-	512,368								
Field Wiring - AMI Installation		Internal Labor	Field Services	Capital	All Other Departments	\$ 74.00	\$ 98.48	103,124	9,390,350	-	-	9,390,350								
Field COE Installation		Internal Labor	Field Services	Capital	All Other Departments	\$ 77.18	\$ 98.48	87,416	8,741,416	-	-	8,741,416	2.20							
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							
Source (for A and K based meters)		Internal Labor	Field Services	Capital	All Other Departments	\$ 89.37	\$ 140.73	3,866	576,864	-	-	576,864								
TBO		Internal Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
Field Services																				
Distribution Service Tech	Field Migration	Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$ 55.00	20,720	1,139,600	-	-	1,139,600								
Distribution Service Tech	Field Migration	Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	4,160	4,160	-	-	4,160								
Distribution Service Tech	Field Migration	Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	5,320	5,320	-	-	5,320								
Distribution Service Tech	Field Migration	Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	5,300	5,300	-	-	5,300								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-	-								
TBO		Staff Augmentation Labor	Field Services	Capital	All Other Departments	\$	\$	-	-	-	-									

APPENDIX C

[illegible]

User Notes:
 1. This worksheet is linked to the data information which can be found in the "Data" tab.
 2. All data fields that are "Not" listed, must be kept in manual.
 3. In Column H, input "Unburdened" hourly rates, and ensure accordingly.
 4. In Columns P - BW, enter only whole hours (fractions of 1).

Role	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497	1496	1495	1494	1493	1492	1491	1490	1489	1488	1487	1486	1485	1484	1483	1482	1481	1480	1479	1478	1477	1476	1475	1474	1473	1472	1471	1470	1469	1468	1467	1466	1465	1464	1463	1462	1461	1460	1459	1458	1457	1456	1455	1454	1453	1452	1451	1450	1449	1448	1447	1446	1445	1444	1443	1442	1441	1440	1439	1438	1437	1436	1435	1434	1433	1432	1431	1430	1429	1428	1427	1426	1425	1424	1423	1422	1421	1420	1419	1418	1417	1416	1415	1414	1413	1412	1411	1410	1409	1408	1407	1406	1405	1404	1403	1402	1401	1400	1399	1398	1397	1396	1395	1394	1393	1392	1391	1390	1389	1388	1387	1386	1385	1384	1383	1382	1381	1380	1379	1378	1377	1376	1375	1374	1373	1372	1371	1370	1369	1368	1367	1366	1365	1364	1363	1362	1361	1360	1359	1358	1357	1356	1355	1354	1353	1352	1351	1350	1349	1348	1347	1346	1345	1344	1343	1342	1341	1340	1339	1338	1337	1336	1335	1334	1333	1332	1331	1330	1329	1328	1327	1326	1325	1324	1323	1322	1321	1320	1319	1318	1317	1316	1315	1314	1313	1312	1311	1310	1309	1308	1307	1306	1305	1304	1303	1302	1301	1300	1299	1298	1297	1296	1295	1294	1293	1292	1291	1290	1289	1288	1287	1286	1285	1284	1283	1282	1281	1280	1279	1278	1277	1276	1275	1274	1273	1272	1271	1270	1269	1268	1267	1266	1265	1264	1263	1262	1261	1260	1259	1258	1257	1256	1255	1254	1253	1252	1251	1250	1249	1248	1247	1246	1245	1244	1243	1242	1241	1240	1239	1238	1237	1236	1235	1234	1233	1232	1231	1230	1229	1228	1227	1226	1225	1224	1223	1222	1221	1220	1219	1218	1217	1216	1215	1214	1213	1212	1211	1210	1209	1208	1207	1206	1205	1204	1203	1202	1201	1200	1199	1198	1197	1196	1195	1194	1193	1192	1191	1190	1189	1188	1187	1186	1185	1184	1183	1182	1181	1180	1179	1178	1177	1176	1175	1174	1173	1172	1171	1170	1169	1168	1167	1166	1165	1164	1163	1162	1161	1160	1159	1158	1157	1156	1155	1154	1153	1152	1151	1150	1149	1148	1147	1146	1145	1144	1143	1142	1141	1140	1139	1138	1137	1136	1135	1134	1133	1132	1131	1130	1129	1128	1127	1126	1125	1124	1123	1122	1121	1120	1119	1118	1117	1116	1115	1114	1113	1112	1111	1110	1109	1108	1107	1106	1105	1104	1103	1102	1101	1100	1099	1098	1097	1096	1095	1094	1093	1092	1091	1090	1089	1088	1087	1086	1085	1084	1083	1082	1081	1080	1079	1078	1077	1076	1075	1074	1073	1072	1071	1070	1069	1068	1067	1066	1065	1064	1063	1062	1061	1060	1059	1058	1057	1056	1055	1054	1053	1052	1051	1050	1049	1048	1047	1046	1045	1044	1043	1042	1041	1040	1039	1038	1037	1036	1035	1034	1033	1032	1031	1030	1029	1028	1027	1026	1025	1024	1023	1022	1021	1020	1019	1018	1017	1016	1015	1014	1013	1012	1011	1010	1009	1008	1007	1006	1005	1004	1003	1002	1001	1000	999	998	997	996	995	994	993	992	991	990	989	988	987	986	985	984	983	982	981	980	979	978	977	976	975	974	973	972	971	970	969	968	967	966	965	964	963	962	961	960	959	958	957	956	955	954	953	952	951	950	949	948	947	946	945	944	943	942	941	940	939	938	937	936	935	934	933	932	931	930	929	928	927	926	925	924	923	922	921	920	919	918	917	916	915	914	913	912	911	910	909	908	907	906	905	904	903	902	901	900	899	898	897	896	895	894	893	892	891	890	889	888	887	886	885	884	883	882	881	880	879	878	877	876	875	874	873	872	871	870	869	868	867	866	865	864	863	862	861	860	859	858	857	856	855	854	853	852	851	850	849	848	847	846	845	844	843	842	841	840	839	838	837	836	835	834	833	832	831	830	829	828	827	826	825	824	823	822	821	820	819	818	817	816	815	814	813	812	811	810	809	808	807	806	805	804	803	802	801	800	799	798	797	796	795	794	793	792	791	790	789	788	787	786	785	784	783	782	781	780	779	778	777	776	775	774	773	772	771	770	769	768	767	766	765	764	763	762	761	760	759	758	757	756	755	754	753	752	751	750	749	748	747	746	745	744	743	742	741	740	739	738	737	736	735	734	733	732	731	730	729	728	727	726	725	724	723	722	721	720	719	718	717	716	715	714	713	712	711	710	709	708	707	706	705	704	703	702	701	700	699	698	697	696	695	694	693	692	691	690	689	688	687	686	685	684	683	682	681	680	679	678	677	676	675	674	673	672	671	670	669	668	667	666	665	664	663	662	661	660	659	658	657	656	655	654	653	652	651	650	649	648	647	646	645	644	643	642	641	640	639	638	637	636	635	634	633	632	631	630	629	628	627	626	625	624	623	622	621	620	619	618	617	616	615	614	613	612	611	610	609	608	607	606	605	604	603	602	601	600	599	598	597	596	595	594	593	592	591	590	589	588	587	586	585	584	583	582	581	580	579	578	577	576	575	574	573	572	571	570	569	568	567	566	565	564	563	562	561	560	559	558	557	556	555	554	553	552	551	550	549	548	547	546	545	544	543	542	541	540	539	538	537	536	535	534	533	532	531	530	529	528	527	526	525	524	523	522	521	520	519	518	517	516	515	514	513	512	511	510	509	508	507	506	505	504	503	502	501	500	499	498	497	496	495	494	493	492	491	490	489	488	487	486	485	484	483	482	481	480	479	478	477	476	475	474	473	472	471	470	469	468	467	466	465	464	463	462	461	460	459	458	457	456	455	454	453	452	451	450	449	448	447	446	445	444	443	442	441	440	439	438	437	436	435	434	433	432	431	430	429	428	427	426	425	424	423	422	421	420	419	418	417	416	415	414	413	412	411	410	409	408	407	406	405	404	403	402	401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Jan-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9
10	10	10	10	10	10	10	10
11	11	11	11	11	11	11	11
12	12	12	12	12	12	12	12
13	13	13	13	13	13	13	13
14	14	14	14	14	14	14	14
15	15	15	15	15	15	15	15
16	16	16	16	16	16	16	16
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19	19	19	19	19	19	19	19
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22	22	22	22	22	22	22	22
23	23	23	23	23	23	23	23
24	24	24	24	24	24	24	24
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26	26	26	26	26	26	26	26
27	27	27	27	27	27	27	27
28	28	28	28	28	28	28	28
29	29	29	29	29	29	29	29
30	30	30	30	30	30	30	30
31	31	31	31	31	31	31	31

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Summary of Labor & Cash Flow "by Year"	
Project Management	
Project Management	
Field Services	
Field Services	
Telecom	
Telecom	
Contractor Services	
Billing	
Grand Total - All Labor Classifications	

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Summary of Labor \$ Cash Flow "by Year"	
Project Management	
Project Management	
Field Services	
Field Services	
Telephone	
Telephone	
Contractor Services	
Billing	
Grand Total - All Labor Classifications	

Labor Burden Rates and Factors Assumptions

INTERNAL Services Co. Employees (Non-Affiliate) Internal Hourly Rate Factor (see Labor Loaders Rates) to assess project for proper burdens			
Internal Labor Loaders Factor (Unburdened)		1.00	Basis of Estimated Rates Used
Fringe	0.21	21.00%	Type basis of rate choice here defaulted to Service Company rate - may need to be higher/lower based on project jurisdiction and/or actual guidance from Finance.
Incentive	0.11	10.50%	Type basis of rate choice here defaulted to standard assumption from Finance in Jan 2014 - may need to be higher/lower based on actual guidance from Finance.
Payroll Tax	0.10	7.63%	Type basis of rate choice here defaulted to standard assumption from Finance in Jan 2014 - may need to be higher/lower based on actual guidance from Finance.
Serv. Co. Loader	0.25	25.32%	Type basis of rate choice here defaulted to Service Company - actual rate - may need to be higher/lower based on new guidance from Finance.
Internal Labor Loaders Factor (Burdened)		1.67	
TS&E/ETS Internal Hourly Rate Factor (see Labor Loaders Rates) to assess project for proper burdens			
Internal Labor Loaders Factor (Unburdened)		1.00	Basis of Estimated Rates Used
Fringe	0.15	14.92%	Type basis of rate choice here defaulted to CE Florida rate - may need to be higher/lower based on project jurisdiction and/or actual guidance from Finance.
Incentive	0.11	10.50%	Type basis of rate choice here defaulted to standard assumption from Finance in Jan 2014 - may need to be higher/lower based on actual guidance from Finance.
Payroll Tax	0.10	7.63%	Type basis of rate choice here defaulted to standard assumption from Finance in Jan 2014 - may need to be higher/lower based on actual guidance from Finance.
Utility Loader	0.45	45.00%	Type basis of rate choice here defaulted to first planning rate for Unsubsidized Utility network - may need to be higher/lower based on new guidance from Finance.
Internal Labor Loaders Factor (Burdened)		1.76	
OTHER BIDDING CONTRACTORS (Affiliate or Non-Affiliate) Internal Hourly Rate Factor (see Labor Loaders Rates) to assess project for proper burdens			
Internal Labor Loaders Factor (Unburdened)		1.00	Basis of Estimated Rates Used
Fringe	0.15	14.92%	Type basis of rate choice here defaulted to CE Florida rate - may need to be higher/lower based on project jurisdiction and/or actual guidance from Finance.
Incentive	0.11	10.50%	Type basis of rate choice here defaulted to standard assumption from Finance in Jan 2014 - may need to be higher/lower based on actual guidance from Finance.
Payroll Tax	0.10	7.63%	Type basis of rate choice here defaulted to standard assumption from Finance in Jan 2014 - may need to be higher/lower based on actual guidance from Finance.
Affiliate Loader	0.55	55.00%	Type basis of rate choice here defaulted to Affiliate Loader rate - may need to be higher/lower based on actuals or guidance from Finance.
Internal Labor Loaders Factor (Burdened)		1.80	
Staff Augmentation Labor Hourly Rates (no burdens) (see various rates above)			
Contractor Labor Hourly Rates (no burdens) (see various rates above)			



**Grid Solutions
Duke Energy Progress
DEP
AMR to AMI Deployment
Class 2 - (5% to 15%)
COST ESTIMATE DETAIL**

Issue Date: 05/17/17
Revision No:
IPRS No: IPRS #317
Estimate No: Est #336

Page 1 of 1

[illegible]



**Grid Solutions
Duke Energy Progress
DEP
AMR to AMI Deployment**

Issue Date: 05/17/17
Revision No:
IPRS No: IPRS #317
Estimate No: Est #336

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

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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" font, 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.

Cash Flow Categories	Cost Category	Capital / O&M	IT/Telecom/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
Iron Meters	Materials & Mat Burdens	Capital	All Other Departments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Connected On Route (CGR)	Materials & Mat Burdens	Capital	All Other Departments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Range Extenders (RRE)	Materials & Mat Burdens	Capital	All Other Departments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Internal Labor	Capital	All Other Departments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Management	Internal Labor	Capital	All Other Departments	7,978,455	8,309	7,755	9,945	4,729	-	446	-	-	-	57,556	57,944	57,944	70,648	71,037	77,135	77,389	77,130	89,703	131,250
Project Management	Staff Augmentation Labor	Capital	All Other Departments	2,194,807	3,523	7,697	4,641	1,774	-	-	-	-	-	2,842	2,842	2,842	4,736	4,736	14,209	14,209	33,682	42,738	81,573
Field Services	Internal Labor	Capital	All Other Departments	17,643,942	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Services	Staff Augmentation Labor	Capital	All Other Departments	1,139,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Telecom	Internal Labor	Capital	Telecom	224,559	-	-	-	-	-	-	-	-	-	-	-	12,024	12,024	10,448	7,463	7,463	7,463	10,293	10,293
Telecom	Staff Augmentation Labor	Capital	Telecom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contractor Services	Contractor Labor	Capital	All Other Departments	29,196,068	2,275	(746)	(1,529)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Billing	Internal Labor	Capital	All Other Departments	724,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,030
Billing	Staff Augmentation Labor	Capital	All Other Departments	877,430	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,430
Escalation	Other	Capital	All Other Departments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11,972
Internal	Internal Labor	Capital	All Other Departments	1,521,374	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,102
Staff Augmentation	Staff Augmentation Labor	Capital	All Other Departments	236,901	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,614
Internal	Internal Labor	Capital	Telecom	6,138	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	283
Staff Augmentation	Staff Augmentation Labor	Capital	Telecom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Permeation	Meals/Travel/Lodging/Fleet	Capital	All Other Departments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Excesses	Meals/Travel/Lodging/Fleet	Capital	Telecom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron Travel	Meals/Travel/Lodging/Fleet	Capital	All Other Departments	700,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,722
Optical Cables and Probes	Materials & Mat Burdens	O&M	All Other Departments	18,626	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Risk EMV & Contingency - Estimate Uncertainty	Contingency	Capital	All Other Departments	15,188,003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grid Solutions POOL 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	11,955
Grid Solutions POOL Allocation	PMO (Allocation)	O&M	All Other Departments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total - All Cash Flow Categories				278,162,481	13,916	15,029	12,790	7,227	-	471	-	-	-	62,813	75,723	75,723	89,266	759,377	775,565	775,834	785,416	1,321,399	337,764

IPRS 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
Internal Labor	Capital	IT&T	232,697	-	-	-	-	-	-	-	-	-	-	-	12,024	12,024	10,448	7,463	7,463	7,463	10,283	10,571
Capital	All Other Departments	IT&T	27,868,571	6,988	7,785	8,948	4,729	-	446	-	-	-	57,556	57,944	57,944	70,648	94,979	101,071	101,331	101,071	113,805	187,317
O&M	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Staff Augmentation Labor	Capital	All Other Departments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O&M	All Other Departments	IT&T	4,445,738	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	95,965
Contractor Labor	Capital	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital	All Other Departments	IT&T	29,196,068	2,275	(746)	(1,529)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,030
O&M	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Materials & Mat Burdens	Capital	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital	All Other Departments	IT&T	198,038,259	-	-	-	-	-	-	-	-	-	-	-	-	-	647,911	647,911	647,911	647,911	647,911	17,204
O&M	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Meals/Travel/Lodging/Fleet	Capital	All Other Departments	18,626	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O&M	Capital	-	700,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,722
Other	Capital	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital	All Other Departments	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O&M	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contingency	Capital	All Other Departments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capital	IT&T	-	15,188,003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500,000
O&M	Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	11,955
O&M	All Other Departments	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PMO (Allocation)	Capital	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O&M	Capital	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AFUDC	Capital	IT&T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IPRS Grand Total			278,162,481	13,916	15,029	12,790	7,227	-	471	-	-	-	62,813	75,723	75,723	89,266	759,377	775,565	775,834	785,416	1,321,399	337,764

REDACTED

Oct 20 2017

[illegible][illegible]

2020	2020	2020	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
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
105,167	148,085	102,090	74,537	74,537	76,157	68,300	47,130	19,786						
19,946	4,736	4,739	4,739	4,736	4,736	4,739	4,736	4,736						
37,144	363,924	213,441	141,471	141,474	141,474	139,664	97,844	54,419	10,883					
35,200	35,200	35,200	35,200	17,600										
3,735	912	912	912	746	746	746	746	746						
886,095	892,379	232,302	4,731	4,731	4,731	4,731	4,731	4,731						
19,200	19,200	19,200	19,200	9,600	6,400	6,400	3,200	1,600						
23,667	23,667	23,667	23,667	11,834	7,889	7,889	3,944	1,972						
51,723	45,268	32,703	16,814	25,720	23,895	19,680	11,371	3,677						
6,548	5,431	3,431	7,284	7,284	7,284	7,284	7,284	7,284						
317	79	79	104	85	85	85	85	85						
16,444	19,444	19,444	16,444	19,444	19,444	19,444	16,444	16,444						
		2,500,000						7,186,000						
105,461	53,005	28,635	13,258	11,806	9,903	6,130	4,678	1,871						
7,142,421	5,637,044	4,636,341	371,952	326,369	276,929	230,827	146,274	7,256,084						

Q1-21	Q2-21	Q3-21	Q4-21	Q1-22	Q2-22	Q3-22	Q4-22	Q1-23	Q2-23	Q3-23	Q4-23	Q1-24	Q2-24	Q3-24	Q4-24	Q1-25	Q2-25	Q3-25	Q4-25	Q1-26	Q2-26	Q3-26	Q4-26	Q1-27	Q2-27	Q3-27	Q4-27	Q1-28	Q2-28	Q3-28	Q4-28	Q1-29	Q2-29	Q3-29	Q4-29	Q1-30	Q2-30	Q3-30	Q4-30	Q1-31	Q2-31	Q3-31	Q4-31	Q1-32	Q2-32	Q3-32	Q4-32	Q1-33	Q2-33	Q3-33	Q4-33	Q1-34	Q2-34	Q3-34	Q4-34	Q1-35	Q2-35	Q3-35	Q4-35	Q1-36	Q2-36	Q3-36	Q4-36	Q1-37	Q2-37	Q3-37	Q4-37	Q1-38	Q2-38	Q3-38	Q4-38	Q1-39	Q2-39	Q3-39	Q4-39	Q1-40	Q2-40	Q3-40	Q4-40	Q1-41	Q2-41	Q3-41	Q4-41	Q1-42	Q2-42	Q3-42	Q4-42	Q1-43	Q2-43	Q3-43	Q4-43	Q1-44	Q2-44	Q3-44	Q4-44	Q1-45	Q2-45	Q3-45	Q4-45	Q1-46	Q2-46	Q3-46	Q4-46	Q1-47	Q2-47	Q3-47	Q4-47	Q1-48	Q2-48	Q3-48	Q4-48	Q1-49	Q2-49	Q3-49	Q4-49	Q1-50	Q2-50	Q3-50	Q4-50	Q1-51	Q2-51	Q3-51	Q4-51	Q1-52	Q2-52	Q3-52	Q4-52	Q1-53	Q2-53	Q3-53	Q4-53	Q1-54	Q2-54	Q3-54	Q4-54	Q1-55	Q2-55	Q3-55	Q4-55	Q1-56	Q2-56	Q3-56	Q4-56	Q1-57	Q2-57	Q3-57	Q4-57	Q1-58	Q2-58	Q3-58	Q4-58	Q1-59	Q2-59	Q3-59	Q4-59	Q1-60	Q2-60	Q3-60	Q4-60	Q1-61	Q2-61	Q3-61	Q4-61	Q1-62	Q2-62	Q3-62	Q4-62	Q1-63	Q2-63	Q3-63	Q4-63	Q1-64	Q2-64	Q3-64	Q4-64	Q1-65	Q2-65	Q3-65	Q4-65	Q1-66	Q2-66	Q3-66	Q4-66	Q1-67	Q2-67	Q3-67	Q4-67	Q1-68	Q2-68	Q3-68	Q4-68	Q1-69	Q2-69	Q3-69	Q4-69	Q1-70	Q2-70	Q3-70	Q4-70	Q1-71	Q2-71	Q3-71	Q4-71	Q1-72	Q2-72	Q3-72	Q4-72	Q1-73	Q2-73	Q3-73	Q4-73	Q1-74	Q2-74	Q3-74	Q4-74	Q1-75	Q2-75	Q3-75	Q4-75	Q1-76	Q2-76	Q3-76	Q4-76	Q1-77	Q2-77	Q3-77	Q4-77	Q1-78	Q2-78	Q3-78	Q4-78	Q1-79	Q2-79	Q3-79	Q4-79	Q1-80	Q2-80	Q3-80	Q4-80	Q1-81	Q2-81	Q3-81	Q4-81	Q1-82	Q2-82	Q3-82	Q4-82	Q1-83	Q2-83	Q3-83	Q4-83	Q1-84	Q2-84	Q3-84	Q4-84	Q1-85	Q2-85	Q3-85	Q4-85	Q1-86	Q2-86	Q3-86	Q4-86	Q1-87	Q2-87	Q3-87	Q4-87	Q1-88	Q2-88	Q3-88	Q4-88	Q1-89	Q2-89	Q3-89	Q4-89	Q1-90	Q2-90	Q3-90	Q4-90	Q1-91	Q2-91	Q3-91	Q4-91	Q1-92	Q2-92	Q3-92	Q4-92	Q1-93	Q2-93	Q3-93	Q4-93	Q1-94	Q2-94	Q3-94	Q4-94	Q1-95	Q2-95	Q3-95	Q4-95	Q1-96	Q2-96	Q3-96	Q4-96	Q1-97	Q2-97	Q3-97	Q4-97	Q1-98	Q2-98	Q3-98	Q4-98	Q1-99	Q2-99	Q3-99	Q4-99	Q1-00	Q2-00	Q3-00	Q4-00	Q1-01	Q2-01	Q3-01	Q4-01	Q1-02	Q2-02	Q3-02	Q4-02	Q1-03	Q2-03	Q3-03	Q4-03	Q1-04	Q2-04	Q3-04	Q4-04	Q1-05	Q2-05	Q3-05	Q4-05	Q1-06	Q2-06	Q3-06	Q4-06	Q1-07	Q2-07	Q3-07	Q4-07	Q1-08	Q2-08	Q3-08	Q4-08	Q1-09	Q2-09	Q3-09	Q4-09	Q1-10	Q2-10	Q3-10	Q4-10	Q1-11	Q2-11	Q3-11	Q4-11	Q1-12	Q2-12	Q3-12	Q4-12	Q1-13	Q2-13	Q3-13	Q4-13	Q1-14	Q2-14	Q3-14	Q4-14	Q1-15	Q2-15	Q3-15	Q4-15	Q1-16	Q2-16	Q3-16	Q4-16	Q1-17	Q2-17	Q3-17	Q4-17	Q1-18	Q2-18	Q3-18	Q4-18	Q1-19	Q2-19	Q3-19	Q4-19	Q1-20	Q2-20	Q3-20	Q4-20	Q1-21	Q2-21	Q3-21	Q4-21	Q1-22	Q2-22	Q3-22	Q4-22	Q1-23	Q2-23	Q3-23	Q4-23	Q1-24	Q2-24	Q3-24	Q4-24	Q1-25	Q2-25	Q3-25	Q4-25	Q1-26	Q2-26	Q3-26	Q4-26	Q1-27	Q2-27	Q3-27	Q4-27	Q1-28	Q2-28	Q3-28	Q4-28	Q1-29	Q2-29	Q3-29	Q4-29	Q1-30	Q2-30	Q3-30	Q4-30	Q1-31	Q2-31	Q3-31	Q4-31	Q1-32	Q2-32	Q3-32	Q4-32	Q1-33	Q2-33	Q3-33	Q4-33	Q1-34	Q2-34	Q3-34	Q4-34	Q1-35	Q2-35	Q3-35	Q4-35	Q1-36	Q2-36	Q3-36	Q4-36	Q1-37	Q2-37	Q3-37	Q4-37	Q1-38	Q2-38	Q3-38	Q4-38	Q1-39	Q2-39	Q3-39	Q4-39	Q1-40	Q2-40	Q3-40	Q4-40	Q1-41	Q2-41	Q3-41	Q4-41	Q1-42	Q2-42	Q3-42	Q4-42	Q1-43	Q2-43	Q3-43	Q4-43	Q1-44	Q2-44	Q3-44	Q4-44	Q1-45	Q2-45	Q3-45	Q4-45	Q1-46	Q2-46	Q3-46	Q4-46	Q1-47	Q2-47	Q3-47	Q4-47	Q1-48	Q2-48	Q3-48	Q4-48	Q1-49	Q2-49	Q3-49	Q4-49	Q1-50	Q2-50	Q3-50	Q4-50	Q1-51	Q2-51	Q3-51	Q4-51	Q1-52	Q2-52	Q3-52	Q4-52	Q1-53	Q2-53	Q3-53	Q4-53	Q1-54	Q2-54	Q3-54	Q4-54	Q1-55	Q2-55	Q3-55	Q4-55	Q1-56	Q2-56	Q3-56	Q4-56	Q1-57	Q2-57	Q3-57	Q4-57	Q1-58	Q2-58	Q3-58	Q4-58	Q1-59	Q2-59	Q3-59	Q4-59	Q1-60	Q2-60	Q3-60	Q4-60	Q1-61	Q2-61	Q3-61	Q4-61	Q1-62	Q2-62	Q3-62	Q4-62	Q1-63	Q2-63	Q3-63	Q4-63	Q1-64	Q2-64	Q3-64	Q4-64	Q1-65	Q2-65	Q3-65	Q4-65	Q1-66	Q2-66	Q3-66	Q4-66	Q1-67	Q2-67	Q3-67	Q4-67	Q1-68	Q2-68	Q3-68	Q4-68	Q1-69	Q2-69	Q3-69	Q4-69	Q1-70	Q2-70	Q3-70	Q4-70	Q1-71	Q2-71	Q3-71	Q4-71	Q1-72	Q2-72	Q3-72	Q4-72	Q1-73	Q2-73	Q3-73	Q4-73	Q1-74	Q2-74	Q3-74	Q4-74	Q1-75	Q2-75	Q3-75	Q4-75	Q1-76	Q2-76	Q3-76	Q4-76	Q1-77	Q2-77	Q3-77	Q4-77	Q1-78	Q2-78	Q3-78	Q4-78	Q1-79	Q2-79	Q3-79	Q4-79	Q1-80	Q2-80	Q3-80	Q4-80	Q1-81	Q2-81	Q3-81	Q4-81	Q1-82	Q2-82	Q3-82	Q4-82	Q1-83	Q2-83	Q3-83	Q4-83	Q1-84	Q2-84	Q3-84	Q4-84	Q1-85	Q2-85	Q3-85	Q4-85	Q1-86	Q2-86	Q3-86	Q4-86	Q1-87	Q2-87	Q3-87	Q4-87	Q1-88	Q2-88	Q3-88	Q4-88	Q1-89	Q2-89	Q3-89	Q4-89	Q1-90	Q2-90	Q3-90	Q4-90	Q1-91	Q2-91	Q3-91	Q4-91	Q1-92	Q2-92	Q3-92	Q4-92	Q1-93	Q2-93	Q3-93	Q4-93	Q1-94	Q2-94	Q3-94	Q4-94	Q1-95	Q2-95	Q3-95	Q4-95	Q1-96	Q2-96	Q3-96	Q4-96	Q1-97	Q2-97	Q3-97	Q4-97	Q1-98	Q2-98	Q3-98	Q4-98	Q1-99	Q2-99	Q3-99	Q4-99	Q1-00	Q2-00	Q3-00	Q4-00	Q1-01	Q2-01	Q3-01	Q4-01	Q1-02	Q2-02	Q3-02	Q4-02	Q1-03	Q2-03	Q3-03	Q4-03	Q1-04	Q2-04	Q3-04	Q4-04	Q1-05	Q2-05	Q3-05	Q4-05	Q1-06	Q2-06	Q3-06	Q4-06	Q1-07	Q2-07	Q3-07	Q4-07	Q1-08	Q2-08	Q3-08	Q4-08	Q1-09	Q2-09	Q3-09	Q4-09	Q1-10	Q2-10	Q3-10	Q4-10	Q1-11	Q2-11	Q3-11	Q4-11	Q1-12	Q2-12	Q3-12	Q4-12	Q1-13	Q2-13	Q3-13	Q4-13	Q1-14	Q2-14	Q3-14	Q4-14	Q1-15	Q2-15	Q3-15	Q4-15	Q1-16	Q2-16	Q3-16	Q4-16	Q1-17	Q2-17	Q3-17	Q4-17	Q1-18	Q2-18	Q3-18	Q4-18	Q1-19	Q2-19	Q3-19	Q4-19	Q1-20	Q2-20	Q3-20	Q4-20	Q1-21	Q2-21	Q3-21	Q4-21	Q1-22	Q2-22	Q3-22	Q4-22	Q1-23	Q2-23	Q3-23	Q4-23	Q1-24	Q2-24	Q3-24	Q4-24	Q1-25	Q2-25	Q3-25	Q4-25	Q1-26	Q2-26	Q3-26	Q4-26	Q1-27	Q2-27	Q3-27	Q4-27	Q1-28	Q2-28	Q3-28	Q4-28	Q1-29	Q2-29	Q3-29	Q4-29	Q1-30	Q2-30	Q3-30	Q4-30	Q1-31	Q2-31	Q3-31	Q4-31	Q1-32	Q2-32	Q3-32	Q4-32	Q1-33	Q2-33	Q3-33	Q4-33	Q1-34	Q2-34	Q3-34	Q4-34	Q1-35	Q2-35	Q3-35	Q4-35	Q1-36	Q2-36	Q3-36	Q4-36	Q1-37	Q2-37	Q3-37	Q4-37	Q1-38	Q2-38	Q3-38	Q4-38	Q1-39	Q2-39	Q3-39	Q4-39	Q1-40	Q2-40	Q3-40	Q4-40	Q1-41	Q2-41	Q3-41	Q4-41	Q1-42	Q2-42	Q3-42	Q4-42	Q1-43	Q2-43	Q3-43	Q4-43	Q1-44	Q2-44	Q3-44	Q4-44	Q1-45	Q2-45	Q3-45	Q4-45	Q1-46	Q2-46	Q3-46	Q4-46	Q1-47	Q2-47	Q3-47	Q4-47	Q1-48	Q2-48	Q3-48	Q4-48	Q1-49	Q2-49	Q3-49	Q4-49	Q1-50	Q2-50	Q3-50	Q4-50	Q1-51	Q2-51	Q3-51	Q4-51	Q1-52	Q2-52	Q3-52	Q4-52	Q1-53	Q2-53	Q3-53	Q4-53	Q1-54	Q2-54	Q3-54	Q4-54	Q1-55	Q2-55	Q3-55	Q4-55	Q1-56	Q2-56	Q3-56	Q4-56	Q1-57	Q2-57	Q3-57	Q4-57	Q1-58	Q2-58	Q3-58	Q4-58	Q1-59	Q2-59	Q3-59	Q4-59	Q1-60	Q2-60	Q3-60	Q4-60	Q1-61	Q2-61	Q3-61	Q4-61	Q1-62	Q2-62	Q3-62	Q4-62	Q1-63	Q2-63	Q3-63	Q4-63	Q1-64	Q2-64	Q3-64	Q4-64	Q1-65	Q2-65	Q3-65	Q4-65	Q1-66	Q2-66	Q3-66	Q4-66	Q1-67	Q2-67	Q3-67	Q4-67	Q1-68	Q2-68	Q3-68	Q4-68	Q1-69	Q2-69	Q3-69	Q4-69	Q1-70	Q2-70	Q3-70	Q4-70	Q1-71	Q2-71	Q3-71	Q4-71	Q1-72	Q2-72	Q3-72	Q4-72	Q1-73	Q2-73	Q3-73	Q4-73	Q1-74	Q2-74	Q3-74	Q4-74	Q1-75	Q2-75	Q3-75	Q4-75	Q1-76	Q2-76	Q3-76	Q4-76	Q1-77	Q2-77	Q3-77	Q4-77	Q1-78	Q2-78	Q3-78	Q4-78	Q1-79	Q2-79	Q3-79	Q4-79	Q1-80	Q2-80	Q3-80	Q4-80	Q1-81	Q2-81	Q3-81	Q4-81	Q1-82	Q2-82	Q3-82	Q4-82	Q1-83	Q2-83	Q3-83	Q4-83	Q1-84	Q2-84	Q3-84	Q4-84	Q1-85	Q2-85	Q3-85	Q4-85	Q1-86	Q2-86	Q3-86	Q4-86	Q1-87	Q2-87	Q3-87	Q4-87	Q1-88	Q2-88	Q3-88	Q4-88	Q1-89	Q2-89	Q3-89	Q4-89	Q1-90	Q2-90	Q3-90	Q4-90	Q1-91	Q2-91	Q3-91	Q4-91	Q1-92	Q2-92	Q3-92	Q4-92	Q1-93	Q2-93	Q3-93	Q4-93	Q1-94	Q2-94	Q3-94	Q4-94	Q1-95	Q2-95	Q3-95	Q4-95	Q1-96	Q2-96	Q3-96	Q4-96	Q1-97	Q2-97	Q3-97	Q4-97	Q1-98	Q2-98	Q3-98	Q4-98	Q1-99	Q2-99	Q3-99	Q4-99	Q1-00	Q2-00	Q3-00	Q4-00	Q1-01	Q2-01	Q3-01	Q4-01	Q1-02	Q2-02	Q3-02	Q4-02	Q1-03	Q2-03	Q3-03	Q4-03	Q1-04	Q2-04	Q3-04	Q4-04	Q1-05	Q2-05	Q3-05	Q4-05	Q1-06	Q2-06	Q3-06	Q4-06	Q1-07	Q2-07	Q3-07	Q4-07	Q1-08	Q2-08	Q3-08	Q4-08	Q1-09	Q2-09	Q3-09	Q4-09	Q1-10	Q2-10	Q3-10	Q4-10	Q1-11	Q2-11	Q3-11	Q4-11	Q1-12	Q2-12	Q3-12	Q4-12	Q1-13	Q2-13	Q3-13	Q4-13	Q1-14	Q2-14	Q3-14	Q4-14	Q1-15	Q2-15	Q3-15	Q4-15	Q1-16	Q2-16	Q3-16	Q4-16	Q1-17	Q2-17	Q3-17	Q4-17	Q1-18	Q2-18	Q3-18	Q4-18	Q1-19	Q2-19	Q3-19	Q4-19	Q1-20	Q2-20	Q3-20	Q4-20	Q1-21	Q2-21	Q3-21	Q4-21	Q1-22	Q2-22	Q3-22	Q4-22	Q1-23	Q2-23	Q3-23	Q4-23	Q1-24	Q2-24	Q3-24	Q4-24	Q1-25	Q2-25	Q3-25	Q4-25	Q1-26	Q2-26	Q3-26	Q4-26	Q1-27	Q2-27	Q3-27	Q4-27	Q1-28	Q2-28	Q3-28	Q4-28	Q1-29	Q2-29	Q3-29	Q4-29	Q1-30	Q2-30
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Yearly Totals for Escalation Calculations

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
-	-	47,090,538	64,987,569	65,468,177	-	-	0	0	0	0	0	0
-	3,239,555	4,702,754	5,933,785	2,726,626	-	-	0	0	0	0	0	0
-	-	1,135,273	1,992,076	761,905	-	-	0	0	0	0	0	0
-	-	-	-	-	-	-	0	0	0	0	0	0
28,898	636,741	2,240,325	2,389,089	2,317,892	355,509	-	0	0	0	0	0	0
17,015	112,726	736,877	736,877	559,894	28,418	-	0	0	0	0	0	0
-	119,709	4,829,138	6,484,206	5,637,736	573,153	-	0	0	0	0	0	0
-	-	284,000	400,400	423,400	52,800	-	0	0	0	0	0	0
-	74,632	59,374	46,769	39,140	4,644	-	0	0	0	0	0	0
-	-	-	-	-	-	-	0	0	0	0	0	0
-	-	7,711,633	10,706,351	10,749,701	26,384	-	0	0	0	0	0	0
-	-	217,600	230,400	230,400	46,400	-	0	0	0	0	0	0
-	-	263,528	287,486	287,486	36,930	-	0	0	0	0	0	0
-	-	-	-	-	-	-	0	0	0	0	0	0
-	-	204,038	510,367	695,812	111,157	-	0	0	0	0	0	0
-	-	35,459	79,899	107,846	13,697	-	0	0	0	0	0	0
-	-	1,682	2,619	3,327	529	-	0	0	0	0	0	0
-	-	-	-	-	-	-	0	0	0	0	0	0
-	-	-	-	-	-	-	0	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	0	0
-	-	18,626	-	-	-	-	0	0	0	0	0	0
-	500,000	2,500,000	2,500,000	2,500,000	7,188,003	-	0	0	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	0	0	0	0
-	-	-	-	-	-	-	0	0	0	0	0	0
-	-	-	-	-	-	-	0	0	0	0	0	0
-	-	-	-	-	-	-	0	0	0	0	0	0
49,425	4,721,116	72,792,118	96,408,685	93,582,702	8,606,436	-	-	-	-	-	-	-

INSTALLER	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
DUKE	9S 20	9S 20	NON-TOU	IPV6	13666
DUKE	9S 20	9S 20	NON-TOU	DIRECT CONNECT	998
DUKE	9S 200	9S 20	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
DUKE	1S 200	1S 200	TOU	IPV6	7
DUKE	1S 200	1S 200	TOU	DIRECT CONNECT	2
DUKE	2S 200	2S 200	TOU	IPV6	4956
DUKE	2S 200	2S 200	TOU	DIRECT CONNECT	216
DUKE	2S 320	2S 320	TOU	IPV6	23715
DUKE	2S 320	2S 320	TOU	DIRECT CONNECT	1246
DUKE	3S 20	3S 20	TOU	IPV6	5159
DUKE	3S 20	3S 20	TOU	DIRECT CONNECT	307
DUKE	5A 20	5S 20	TOU	IPV6	30
DUKE	5A 20	5S 20	TOU	DIRECT CONNECT	5
DUKE	5S 20	5S 20	TOU	IPV6	2077
DUKE	5S 20	5S 20	TOU	DIRECT CONNECT	191
DUKE	9A 20	9S 20	TOU	IPV6	72
DUKE	9A 20	9S 20	TOU	DIRECT CONNECT	15
DUKE	9S 20	9S 20	TOU	IPV6	11613
DUKE	9S 20	9S 20	TOU	DIRECT CONNECT	632
DUKE	9S 200	9S 20	TOU	IPV6	99
DUKE	9S 200	9S 20	TOU	DIRECT CONNECT	1
DUKE	10A 20	9S 20	TOU	IPV6	7
DUKE	10A 20	9S 20	TOU	DIRECT CONNECT	2
DUKE	12S 200	12S 200	TOU	IPV6	18
DUKE	12S 320	12S 320	TOU	IPV6	4
DUKE	14S 200	16S 320	TOU	IPV6	2
DUKE	15S 480	16S 320	TOU	IPV6	31
DUKE	15S 480	16S 320	TOU	DIRECT CONNECT	2
DUKE	16K 480	9S 20	TOU	IPV6	657
DUKE	16K 480	9S 20	TOU	DIRECT CONNECT	7
DUKE	16S 200	16S 320	TOU	IPV6	10
DUKE	16S 320	16S 320	TOU	IPV6	1937
DUKE	16S 320	16S 320	TOU	DIRECT CONNECT	43
DUKE	16S 480	9S 20	TOU	IPV6	35
DUKE	16S 480	9S 20	TOU	DIRECT CONNECT	4
DUKE	25S 320	9S 20	TOU	IPV6	92
DUKE	25S 320	9S 20	TOU	DIRECT CONNECT	2

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

APPENDIX C

[illegible]

Year	Meters	CGR	R/RE
2018	412,500	1,471	2,919
2019	569,273	1,099	5,122
2020	573,483	505	1,959
2021	0	0	0

	AMI	CGR	RFRE
Hardware			
Accessories			
Misc.			
Advers.			
	177,546,284	16,602,720	3,849,254
Unit costs			
Less Advers. \$	105.14		
0/111			

3.82% assumption within total meter count

Center type	Total	Total	Non-TDU	Cellular	Current Form	Future Form	TDU	Non-TDU	Cellular	Total
15 1000	3,650	1,141	2,509	230	15 1100	15 1200			0	
15 1200	11	2	9	2	41,878	15 1300	2,130	2,511	230	3,861
15 2000	1,539,411	5,172	1,534,239	50,791	127,775,211	25 1200	5,172	3,384,239	50,791	1,539,411
25 1200	64,523	24,961	39,564	3,185	6,994,302	25 1300	24,961	1,954,239	3,185	64,523
25 1300	7	0	7	0	35 1100	35 1200			0	
35 1100	29,434	5,446	23,988	1,702	6,509,461	35 1300	5,446	21,975	1,702	29,434
35 1300	135	0	135	0	35 1400	35 1500			0	
35 1400	310	35	275	55	35 1600	35 1700			0	
35 1500	1	0	1	0	55 1100	55 1200			0	
35 1600	4,720	2,264	6,452	724	2,051,298	55 1300	2,264	6,863	410	5,186
35 1700	46	0	46	9	55 1400	55 1500			0	
35 1800	193	87	106	30	55 1600	55 1700			0	
55 1100	95	0	95	1	55 1800	55 1900			0	
55 1200	26,909	12,245	14,664	1,630	55 2000	55 2100			0	
55 1300	652	361	292	12	55 2200	55 2300			0	
55 1400	64	9	75	9	55 2400	55 2500			0	
55 1500	1	0	1	0	6 110 410	6 120 410	12,334	17,951	1,809	31,189
6 110 410	27,640	18	27,622	36	3,361,281	6 130 410	17,952	34	27,640	
6 120 410	21	4	17	0	6 130 420	6 140 420	4	17	0	21
6 130 410	1	2	0	0	6 140 430	6 150 430			0	
6 140 410	1	0	1	0	6 150 440	6 160 440			0	
35 1400	93	53	2	2	6 160 450	6 170 450			0	
35 1400	3,098	64	2,454	64	6 170 460	6 180 460			0	
35 1500	10,966	10	10,956	296	6 180 470	6 190 470			0	
35 1600	18,184	2,960	14,712	4	5,840,839	6 200 470	2,025	24,177	791	30,202
35 1700	45	39	6	6	6 210 480	6 220 480			0	
35 1800	152	14	138	4	6 230 480	6 240 480			0	
1,501,926	54,337	1,500,079	59,837	199,070	Totals		54,337	1,500,919	59,837	1,555,155

Duke installs	103,126 All TOLL and some Non-TOLL
---------------	------------------------------------

59.357
Per Meter \$

03 126

A based	768
K based	3,098
	3,866

SSN				
Device Type	Authentication			Totals Grand Total
	DEF	Unknown	Unknown	
Active	109	329		528
Installed	1	2		3
Grand Total	110	331		531
Active	1157	2056	2	3215
Installed	2	6		8
Grand Total	1159	2062	2	3223

INSTALLER	CURRENT_FORM	FUTURE_FORM	TOU_STATUS	CELLULAR_STATUS	MTR_GTY
CONTRACTOR	15 100	15 200	NON-TOU	IPV6	2259
CONTRACTOR	15 100	15 200	NON-TOU	DIRECT CONNECT	16
CONTRACTOR	15 200	15 200	NON-TOU	IPV6	129013
CONTRACTOR	15 200	15 200	NON-TOU	IPV6	129013
CONTRACTOR	15 200	15 200	NON-TOU	DIRECT CONNECT	16011
CONTRACTOR	15 200	15 200	NON-TOU	IPV6	3709
CONTRACTOR	15 200	15 200	NON-TOU	DIRECT CONNECT	18011
CONTRACTOR	100 20	95 20	NON-TOU	IPV6	62
CONTRACTOR	100 20	95 20	NON-TOU	DIRECT CONNECT	62
CONTRACTOR	100 20	95 20	NON-TOU	IPV6	1
CONTRACTOR	125 200	125 200	NON-TOU	IPV6	23688
CONTRACTOR	125 200	125 200	NON-TOU	DIRECT CONNECT	34
CONTRACTOR	125 200	125 200	NON-TOU	IPV6	12
CONTRACTOR	125 200	125 200	NON-TOU	IPV6	38
CONTRACTOR	155 480	165 520	NON-TOU	IPV6	2
CONTRACTOR	155 480	95 20	NON-TOU	IPV6	2205
CONTRACTOR	165 480	165 520	NON-TOU	DIRECT CONNECT	76
CONTRACTOR	165 200	165 520	NON-TOU	IPV6	10005
CONTRACTOR	165 200	165 520	NON-TOU	DIRECT CONNECT	16475
CONTRACTOR	165 520	165 520	NON-TOU	IPV6	16278
CONTRACTOR	165 520	165 520	NON-TOU	IPV6	400
CONTRACTOR	165 480	95 20	NON-TOU	DIRECT CONNECT	2
CONTRACTOR	165 480	95 20	NON-TOU	DIRECT CONNECT	2
CONTRACTOR	255 200	95 20	NON-TOU	DIRECT CONNECT	1
DUNE	15 100	15 200	NON-TOU	IPV6	88
DUNE	15 100	15 200	NON-TOU	DIRECT CONNECT	1073
DUNE	15 100	15 200	NON-TOU	DIRECT CONNECT	68
					145769

DUNE	25 300	25 300	YOU	IPV6	7
DUNE	25 300	25 300	YOU	DIRECT CONNECT	3
DUNE	25 300	25 300	NON-TOU	IPV6	4651
DUNE	25 300	25 300	YOU	IPV6	4956
DUNE	25 300	25 300	NON-TOU	DIRECT CONNECT	364
DUNE	25 300	25 300	YOU	DIRECT CONNECT	216
DUNE	25 300	25 300	NON-TOU	IPV6	548
DUNE	25 300	25 300	YOU	IPV6	23715
DUNE	25 300	25 300	NON-TOU	DIRECT CONNECT	18
DUNE	25 300	25 300	YOU	DIRECT CONNECT	1246
DUNE	25 30	25 30	NON-TOU	IPV6	6
DUNE	25 30	25 30	NON-TOU	DIRECT CONNECT	1
DUNE	25 30	25 30	NON-TOU	IPV6	22579
DUNE	25 30	25 30	YOU	IPV6	5125
DUNE	25 30	25 30	NON-TOU	DIRECT CONNECT	1195
DUNE	25 30	25 30	YOU	DIRECT CONNECT	167
DUNE	25 30	25 30	NON-TOU	IPV6	104
DUNE	25 30	25 30	NON-TOU	DIRECT CONNECT	31
DUNE	25 30	25 30	NON-TOU	IPV6	125
DUNE	25 30	25 30	YOU	IPV6	30
DUNE	25 30	25 30	NON-TOU	DIRECT CONNECT	50
DUNE	25 30	25 30	YOU	DIRECT CONNECT	5
DUNE	25 30	25 30	NON-TOU	IPV6	1
DUNE	25 30	25 30	NON-TOU	IPV6	5013
DUNE	25 30	25 30	YOU	IPV6	2077
DUNE	25 30	25 30	NON-TOU	DIRECT CONNECT	133
DUNE	25 30	25 30	YOU	DIRECT CONNECT	180
DUNE	25 30	25 30	NON-TOU	IPV6	37
DUNE	25 30	25 30	NON-TOU	DIRECT CONNECT	9
DUNE	25 30	25 30	NON-TOU	IPV6	93
DUNE	25 30	25 30	YOU	IPV6	72
DUNE	25 30	25 30	NON-TOU	DIRECT CONNECT	15
DUNE	25 30	25 30	YOU	DIRECT CONNECT	10
DUNE	25 30	25 30	NON-TOU	IPV6	8
DUNE	25 30	25 30	NON-TOU	DIRECT CONNECT	1
DUNE	25 30	25 30	NON-TOU	IPV6	13466
DUNE	25 30	25 30	YOU	IPV6	11633
DUNE	25 30	25 30	NON-TOU	DIRECT CONNECT	308
DUNE	25 30	25 30	YOU	DIRECT CONNECT	632
DUNE	25 300	25 30	NON-TOU	IPV6	391
DUNE	25 300	25 30	YOU	IPV6	89
DUNE	25 300	25 30	NON-TOU	DIRECT CONNECT	21
DUNE	25 300	25 30	YOU	DIRECT CONNECT	1
DUNE	25 300	25 30	NON-TOU	IPV6	6
DUNE	25 300	25 30	YOU	IPV6	7
DUNE	25 300	25 30	NON-TOU	DIRECT CONNECT	1
DUNE	25 300	25 30	YOU	DIRECT CONNECT	2
DUNE	25 300	25 300	NON-TOU	IPV6	162
DUNE	25 300	25 300	YOU	IPV6	18
DUNE	25 300	25 300	NON-TOU	DIRECT CONNECT	2
DUNE	25 300	25 300	NON-TOU	IPV6	5
DUNE	25 300	25 300	YOU	IPV6	4
DUNE	25 300	25 300	YOU	IPV6	2
DUNE	25 300	25 300	YOU	IPV6	31
DUNE	25 300	25 300	YOU	DIRECT CONNECT	2
DUNE	25 300	25 30	NON-TOU	IPV6	162
DUNE	25 300	25 30	YOU	IPV6	637
DUNE	25 300	25 30	NON-TOU	DIRECT CONNECT	12
DUNE	25 300	25 30	YOU	DIRECT CONNECT	7
DUNE	25 300	25 300	NON-TOU	IPV6	222
DUNE	25 300	25 300	YOU	IPV6	10
DUNE	25 300	25 300	NON-TOU	DIRECT CONNECT	13
DUNE	25 300	25 300	NON-TOU	IPV6	409
DUNE	25 300	25 300	YOU	IPV6	1397
DUNE	25 300	25 300	NON-TOU	DIRECT CONNECT	64
DUNE	25 300	25 300	YOU	DIRECT CONNECT	48
DUNE	25 300	25 30	YOU	IPV6	35
DUNE	25 300	25 30	NON-TOU	DIRECT CONNECT	4
DUNE	25 300	25 30	NON-TOU	IPV6	1
DUNE	25 300	25 30	YOU	IPV6	91
DUNE	25 300	25 30	NON-TOU	DIRECT CONNECT	1
DUNE	25 300	25 30	YOU	DIRECT CONNECT	2

107567

Manually Adjusted

Labor Loaders for Year 2017		
(Planning Rates confirmed per Finance email 3/16)		
Fringe Benefits	Planning Rates (for 2017 and beyond)	Planning Rates (for 2018 and beyond)
DE Progress	14.92%	(confirm with Finance)
DEBS (Shared Serv. Co.)	21.08%	(confirm with Finance)
Incentive	Planning Rates (for 2017 and beyond)	Planning Rates (for 2018 and beyond)
Average (Non-Union)	10.50%	(confirm with Finance)
Average (Union)	3.00%	(confirm with Finance)
Payroll Tax	Planning Rates (for 2017 and beyond)	Planning Rates (for 2018 and beyond)
Average	7.65%	(confirm with Finance)
Labor Loaders	Planning Rates (for 2017 and beyond)	Planning Rates (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)

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

Labor Loaders for Year 2017*			
Jurisdiction	Shared Service Co Factor	T&D / E&TS Factor**	Affiliate Factor
DE Progress	1.68	1.78	1.88

* 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		
	0.03	

Material Loaders for Year 2016		
(rates per Finance email dated 11/14/16)		
Sales / Use Tax* (by State of Use)	Planning Rates (for 2017 and beyond)	Planning Rates (for 2018 and beyond)
North Carolina	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)
Working Stock***	Planning Rates (for 2017 and beyond)	Planning Rates (for 2018 and beyond)
All Jurisdictions	5.50%	(confirm with Finance)

DOE Escalation Rates - Base Year 2014								
	Nuclear		Scientific & Laboratory		Administration Building & 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)

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	2017	3.200	1.093
Remediation, Dec	2018	3.300	1.126
Remediation, Dec	2019	3.400	1.160
Remediation, Dec	2020	3.500	1.195
Remediation, Dec	2021	3.500	1.230
Remediation, Dec	2022	3.500	1.265
Remediation, Dec	2023	3.500	1.300
Remediation, Dec	2024	3.500	1.335
Remediation, Dec	2025	3.500	1.370

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
 - Reduction in Meter Repair Work
 - 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

Exhibit F

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Oct 20 2017

- Disconnects/reconnects performed remotely
- Inputs:
 - Utilized average annual remote capable customer 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 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
 - % of AMI eligible meters within total meter population
 - % 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
 - % of AMI eligible meters within total meter population
 - % of historical ROF success rates
 - Customer Orders overtime budget

Exhibit F

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Oct 20 2017

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
 - # 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. Company-completed 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
 - $\$ \text{ Savings} = ((\text{Labor Cost} + \text{Outside Labor Costs}) / \text{Number Days Storm Lasted}) \times \text{Days reduced by AMI} \times \text{Benefit Realization \%}$
 - 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)

Exhibit F

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Oct 20 2017

- 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:
 - Improved asset management (aggregate meter data to identify over/under loaded distribution transformers, and stress points in the grid)
 - 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 mis-wiring, 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)
- $\$ \text{ Savings} = \text{Annual Revenue} \times \text{Non-Technical Line Loss \%} \times \text{AMI Enabled Identification} \times \text{AMI Recovery Gain} \times \text{Collection \%} \times \text{Benefit Realization \%}$

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).

Exhibit F

- 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
 - Material cost inflation assumed at 1%, Labor inflation assumed at 3%
 - 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 %

Exhibit G

Appendix C

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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	-	1,679,758	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

Exhibit G

Appendix C

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%

*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%

Exhibit G

REDACTED

Appendix C

Consumer Order Cost Reduction | Remote Order Fulfillment

REDACTED

Remote Disconnect Switch (RDS) Meter Forms

1S	3,661
2S	1,359,411
12S 200	27,640
Total RDS	1,390,712
Total Meters	1,555,256
% RDS	89.42%
% Successful ROF	98.77%

RDS QTY/Total Meters based on Class 3 scope (data as of 3/17/2017)

Residential Meters in DEP

Res Meters	1,313,107
Total DEP Meters	1,563,018
% Residential	84.01%
% Non-Res	15.99%

Data as of 5/9/2017, SGOB

Exclusions

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

Data as of 5/9/2017, SGOB

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
RECONNECT	2,727	133,437	136,164	2.0%	98.0%			\$54.84	\$1,258,410
RNP	1,456	76,514	77,970	1.9%	98.1%			\$54.84	\$715,678
READ	1,228	5,035	6,263	19.6%	80.4%			\$54.84	\$109,184
CHK VOLTAGE	7,478	1	7,479	100.0%	0.0%			\$54.84	\$410,102
HDLE USAGE	121	2,009	2,130	5.7%	94.3%			\$54.84	\$23,330
TOTAL	13,815	301,559	315,374	4.4%	95.6%			\$54.84	\$3,263,570

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

Remote Capable Non-Pay Disconnects

Type	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

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

Avoidance based on Remote-Capable 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	\$2,806,653	\$3,704,893	\$3,854,586

3% inflation, 98% ROF success rate

ROF functionality will be available in mid-August 2018 with the MDN-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	\$876,378	\$851,169	\$876,704	\$903,006	\$930,096	\$957,999	\$986,739
Successful ROF	\$816,214	\$840,700	\$865,911	\$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

3% inflation, 98% ROF success rate

Assumes regulation requiring truck roll for DNP notification (door hanger) will be eliminated in 2019

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

Final Calculations

DNP/Reconn Benefit = Remote Capable Orders x Unit Cost x % RDS x % AMI Eligible Scope x % ROF Success Rate x % Inflation x % Realization

Other Orders Benefit = Remote Capable Orders x Unit Cost x % AMI Eligible Scope x % ROF Success Rate x % Inflation x % Realization

Outage | OK on Arrival

REDACTED

Customer Trouble Orders (CTO)

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	9,960	99.5%
Contractor	50	0.5%
Total	10,010	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

Savings

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

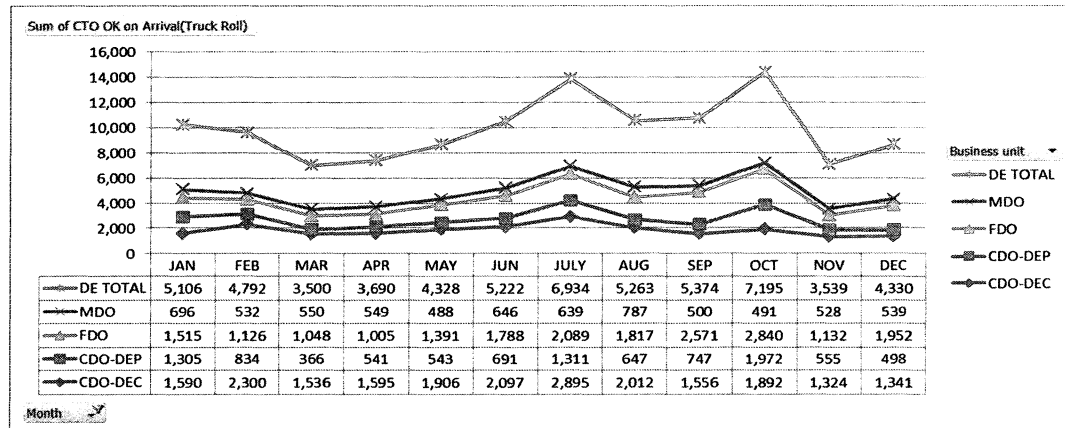

*3% inflation, 90% truck roll avoidance***Final Calculations***Reduced Restoration Costs (OK on Arrival) = Annual Trouble Orders Resulting in OK on Arrival x Average Unit Cost x % Avoidance X % Realization*

Exhibit G

Appendix C

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	1248
MMR ONLY - GOOD MMR				1	0
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

 Excluded from analysis

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

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

Exhibit G

Appendix C

Non-Technical Line Loss Reduction

Inputs & Assumptions

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

¹ 2016 DEP Revenues

² EPRI 1016049: Advanced Metering Infrastructure Technology, Limiting Non-Technical Distribution Losses in the Future

³ Potential revenue erosion to be identified by AMI deployment and current AMI analytics, RevPro 5-Year Plan, based on industry studies

⁴ Potential Recovery Gain

⁵ Amount to be collected from identified revenue erosion through corrective action and back-billing

⁶ 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

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 Connors 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

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:

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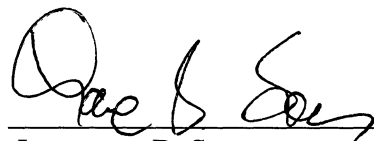
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This is the 20th day of October, 2017.

By: _____



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