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August 12, 2014

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PUCO

Ms. Barcy F. McNeal, Secretary Public Utilities Commission of Ohio 180 East Broad Street, 11th Floor Columbus, Ohio 43215

Re: Case No. 14-841-EL-SSO

Dear Ms. McNeal:

Enclosed is the public version of attachment 7 to the testimony of Duke Energy Ohio witness Marc W. Arnold, submitted in the above-captioned proceeding. This version makes public certain information that was redacted when initially filed. A motion for protective treatment of this document was submitted with the application in this proceeding on May 29, 2014.

Please file the public version of the document in the docket.

Should you have any questions please feel free to contact me.

Respectfully submitted,

Elizabeth H. Watts

Associate General Counsel

Duke Energy Ohio, Inc.

139 E. Fourth Street

Cincinnati, Ohio 45201-0960

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Technician Date Processed AUG 12 2014

Ohio ESP Budget Projection
4 year budget plan for capital

•	47.33 \$178.9	47.33	47.33	43.63	40.63	16.88		
						0	Distribution	Ownership of Underground Residential Services
						0	Distribution	Distribution Operation Center and Mobile Logistics/Modernization
						1.5	Distribution	PILC Replacement (Feeder Exits)
						0	Distribution	Upgrade Distribution Transformer Stations (Unique Customer Locations)
						0	Distribution	Upgrade Live Front Transformers
						0	Distribution	Distribution Substation Protection (Pysical/Security)
						0	Distribution	Upgrade URD Submersible Transformers
						3.8	Distribution	Transformer Retrofit
						0.8	Distribution	Circuit Sectionitation
						98.0	Distribution	Recloser Replacements
						0.15	Distribution	Worst Congested Underground Structures
						2.75	Distribution	Vault Network Protector/Transformer Changeout
						0.9	Distribution	Network Secondary Main Replacement
						0.9	Distribution	Manhole/Vault Capital Rebuild
						0.4	Distribution	DTUG-Online DGA, Sump Pump, Oil Monitoring
						0.82	Distribution	Manhole Lid Retro-fit
						0	Distribution	Canversion of old 4KV Feeders
						2	Distribution	Vegetation Clearing R/W Acquisition / facility modification
•						2	Distribution	URD Cable Injection/Replacement
	Total Capita	2018 Capital 1	700 fr (espfia)	[&]	2015(cp)nd	Budget	Grouping	Approximation (1)
		capital	dget plan for capital	4 year budget pi				

file = \\nam\wsfolders\DATA\NAM\t97897\Documents\Ohio ESP\Ohio ESP budget proposal base draft 2014-4-3 (V3).xlsx tab = Budget Sneet-Raw Data

Progress Transformer Retrofit	Description of Program Continuation of existing transformer retrofit program resulting in fewer transformer related customer outages. This program has a positive business same based on reduction of ORM restoration costs.	Location/Area Entire overhead service area where customers are fed with overhead services. Large majority is in older areas, CSP's were prevalent from 1965 thru early 1990's.	Area of Benefits Costomer Experience, Reliability, Economic Growth, Operate, Integrity	Benefits in detail Isolating outages at a Iransformer level rather than allowing an overloaded or failed transformer to cause a line device to fail or even possibly a substation breaker if fault would occur on the secondary side of the transformer or potentially on the pistuary lead wire. This program also molutes adding a external lighting arrester, squirrel guard, and covered lead wire for additional protection from outages.
Vegetation Clearing R/W Acquisition / facility nodification	Acquisition of additional easements for capital vegetation clearing to reduce tree related outages. Program based on individual project financial evaluation based on developed criteria.	Entire overhead service area, however primary focus areas would be in wooded areas or rite of ways.	Customer Experience, Reliability, Integrity	Outages by dead or at risk trees outside of our easement cause numerous outages annually, the benefits would be to all parties as well as the gublic by potentially removed at risk trees that could damage Duke Lines first, but also protects property and the public.
yng Cable Injection		Existing underground service area with a primary focus on underground runs of cable that have seen fadures and are analyzed by our engineering team and determined to be potential candidates for injection.	Customer Experience, Reliability, Integrity	Cable injection is completed for approximately 1/3 of the cost of replacing it. In addition, the technique and product we are using comes with a 54 years warranty to further midigate future costs. Any lime upgrades are needed, outages are needed for cable replacement and can have a lengthy duration however with injection those times are significantly reduced.
URD Çable Replacement	Replacement of existing UG cable determined to be at end of life and unable to be properly treated. Integrity related program primarily improving SAIOI and CAIOI. Reduction in cable repair O&M.	Existing underground service area where cable injection was possibly attempted or determine not to be feasible.	Customer Experience, Reliability, Integrity	it injection is not possible this is the last option for the company to replace the underground sections of cable. Our to the soil conditions in southwest Ohio we have seen the non-jacketed cable where the neural is deteriorated. SAIDI as yell as CAIDI are significantly affected with underground failures and replacement would also office fluture OBM costs. In 2013 In Ohio, we implemented a switch and fix program that focuses on trying to look to solate the cable rather than immediately attempt to splice it.
DIUG-Online DGA. Sump Pump, Oil Monitaring (Network)	Installation of dissoived gas analysis, oil monitoring Utilizing communication network.	Cincinnati Downtown Network area. This area primatily commercial in nature and is the main area of Downtown broken into four quadrants.	Customer Experience, Reliability, Economic Growth, Operate, Integrity	Reliability is one of the key attractions for commercial tenants to the downtown area. The equipment that is in service downtown is 3-4 times more expensive that what is used in the subsubs and most of the reasoning is due to the age of the infrastructure. The vaults, machole's, and condult systems date back to the early 1900's with some equipment that is still in service from the 1900s. The advantage to girls program is to provide date back to the corphory that could potentially diagnosis or forecest a future failure. DGA monitoring is completed today and is tested at our facility. This program allows for real-time monitoring.
Manhole/Vault Capital Rebuild(Network)	complete restoration of concrete structures including all racking	Cincinnati Downtown Network area. This area primarily commercial in nature and is the main area of Downtown broken Into four guadrants.	Customer Experience, Reliability, Economic Growth, Operate, Integrity	This is a structural rebuild of an aging infrastructure due to age, road traffic, and other underground facilities. The main issues ingipide waiter damage due to leaking rools. Tals program can quickly become a public safety issue if these litems are not addressed in a timely manner and could potentially collapse.
Network Secondary Main Replacement(Network)	Replacement of 600v PILC cable that creates secondary redundancy.	Cincinnati Downtown Network area. This area primarily commercial in nature and is the main area of Downtown broken into four quadrants	Customer Experience, Reliability, Economic Growth, Operate, Integrity	The redundancy of the downtown is vital to attracting new business as well as keeping data centers. An advantage that developers have in legards to building on the network is the lack of the need for back-up generation in most cases. The initial cost of constructions more but the overall benefits outweighs the initial cost.
Vault Network Protector/Transformer Change out(Network)	proactive and reactive replacement of older vault protectors and trensformers. This includes moving from wall mount protectors to transformer mounted if applicable.	Cincinnal Downtown Network area. This area primerly commercial in nature and is the main area of Downtown broken into four quadrants.	Rehability, Operate, Integrity	Duke has a figorous Preventative Maintenance program, however due to the age of some of the equipment it would be more cost effective to epilace the equipment. Some equipment has been a revince over 80 years and the potential failure is imminent due to the environmental conditions. Which of this equipment is unique in nature and poses a potential risk due to lead times on replacements.
Worst Congested Underground Structures(Metwork)	Resolution of congested manholes and vaults that are overcrowded and requiring rebuilds.	Cincinnati Downtown Network area. This area primarily commercial in nature and is the main area of Downtown broken into four quadrants.	Rekability, Operate, Integrity	Several underground structures were built and installed in place due to the congestion of other utilities in the street. Overtime with failures and load growth these structures have become congested and pose a reliability risk due to the close proximity of the other conductors.
Manhole Ud Retro-Al(Metwork)	Installation of Swiveloc Manhole Covers, orimany focus is in high pedestrian areas.	Entire Duke Energy Ohio Service area, however largest concentration is in the Circinnati Oowntown Network area. This area primarily commercial in nature and is the main area of Downtown broken into four quadrants.	Reliability, Economic Growth, Operate, Integrity	Programs primary focus is on safety for both the company and public. When gases build up in the underground vastem and a source of legislation is added a vokatile earlysion occurs and wist typically launch a 2004 to cast from Idi. This program focuses on securing those idds so that it is list occurs the lids lifts very little and releases the gases and then sets back down on the hole.
Upgrøde URD Submersible Transformers	Removal of overhead transformers that were installed in underground vaults. This includes Installing padmounted equipment and getting all connections above grade.	Ouke Energy Ohlo service area, however areas of focus were installed in the 1970's and 1980's. Certail suburbs including Delhi, kyde Park, Avondale, and Mariemont have a large concentration of these installations	Customer Experience, Reliability, Economic	A submersible transformer as it is reference in this program is an overhead transformer that has been retrofitted with under ground bushings 30 that it can be installed below grade. These Installations were prevident during the time period prior to padmount transformer becoming more standard. There are a safety concern for the utility as the employee has to lay on the ground to work on them and they also tend to become a drain for other household debris. These are installed below grade and when they fall today they are replaced with a ground mounted transformer. It to outages can be lengthy. This program will proactively replace these programs and will work in conjunction with the cable indection/replacement programs.
Distribution Substation Protection (Physical/Security)	Upgrade to locations of high theft, Including camers and other deterrents for thieves.	Duke Energy Ohio Service area with a primary focus of areas that see the most vandalism or are at the highest risk.	:	The program call for adding additional security mechanisms and protections including cameras higher fences, and other similar items. When these types of wandalism occurs it is a risk not only to the individual, but also the company,

Program	Description of Program	Location/Area	Area of Benefits	Benefits in detail
Upgrade (Ive Frant Transformers	Replacing 40-50 year old equipment that has been a reliability and safety concern. Transformer has non-insulated HV bushings	Duke Energy Ohio Service area with a primary focus on three phase transformers	Customer Experience, Reliability, Economic Growth, Operate, Integrity	Live front transformers were installed during the 1970's and they are a limitation to the company to expand its underground system as well as a safety concern as the only way that they can be worked on is to be de-energized. This program would identify and proactively replace these units.
Upgrade Olstribution Transformer Stations (Unique Customer Locations)	OE Otto has several unique transformer installations that do not currently have a replacent readily available. Identify and upgrade these installations to current specifications.	Entire Ouke Energy Ohio Service area.	Customer Experience, Reliability, Operate	Nun-standard transformers are not only a risk to the customer in relation to CAIDI, but also a concern for the company. With the evolution of the electric industry and the age of the Greater Cincinnall Area several situations are unique and were special order equipment at the time they were installed. They are considered obsolete in many taxes however the Company has needed to continue service to these premises. In all cases their are options to upgrade/update these installations to current standards. This program would allow us to proactively prioritize and address these concerns before a potential event.
PILC Replacement (Feeder Exils)	Replacement of old paper and lead substation exit cables from the substation to the overhead/underground fines. Cables are approaching end of life and this program would accelerate there replacement.	Duke Energy Ohio Service Area with a primary focus on 13kv substations	Customer Experience, Reliability, Economic Growth, Integrity	PILC cable was a standard installation for many years however with age the oil and papers break down over time. Currently a program exist today for this replacement however with the intrared scans we have determined that we need to accelerate this program. These cables are the first section of a feeder and in most cases if they were to fall would take out two to these thousand customers.
Distribution Operation Center and Mobile Logistics/Modernization	Optimiting and upgrading our facilities to a more mobile workforce. This program includes updating distribution offices, mobile technology, and also exploring opportunities for consolidation of activities.	Ouke Energy Dhio Service Distribution Operation Centers 2015 would include Hardwill Operation Center and Todhunter Operation Centers.	Customer Experience, Reliability, Economic Growth, Operate, Integrity	Duke is investigating in modernizing its operation centers to provide more timely Reponses and also to increase customer satisfaction. This includes implementing mobile technology and also real time updates from the Retol during construction and outage events, in addition the company is looking at potential consolidation of locations (it is deemed inancially sound.
Conversion of old 4KV Feeders	Upgrade of this primary distribution voltage is ongoing. The additional funding would accelerate the upgrades allowing for more load capacity.	Ouke Energy Ohio service area with a focus on the older suburbs. These stations currently exist in Middletown, Franklin, and the Cincinnati Suburbs.	Clustomer Experience, Reliability, Economic Growth, Operate, integrity	As the electrical needs of the service area glew the system needed to be upgraded to serve more customers and to also be able to transmit electricity further. These feeders were installed over 50 years ago and the company has a schedule to continue to ungrade them. These program would accelerate this need into a 5 year plan taking it down from approximately a 10 year plan as it currently stands. Also statuons limit load growth due to load limitations and also are expensive to maintain due to aging infrastructure.
Recloser Replacements	Currently replace 1/6 of these units annitally. This program would accelerate and possibly upgrade some of these devices to electronic controls.	Duke Energy Othio Service Area	Customer Experience, Reliability, Economic Growth, Operate, Integrity	This is an existing program where we change out 1/6 of our reclosers annually. The recloser plays a key role in protecting the main line of the circuit and in making at an attempt to scolete the outage to a smaller group of customers. Annually this encompasses approximately 100 locations or 300 units on the system.
Circuit Sectionization	* Ongoing program sectionliting our distribution feeders allowing the feeders to be broken down into smaller outages rather than all relaying back to a large device.	Ouke Energy Ohio Service Area	Customer Experience, Reliability, Economic Grawth, Operate, Integrity	Existing program that works in conjunctions with our transformer retrofit program and recloses replacement program breaking down the distribution feeders into smaller circuits
Ownership of Underground Residential Services	DE Oblo Currently owns and maintains all overhead electric service drops to the Customer. Many other utilities including in the US install, own and maintain the residential underground electric services. The proposal would be that DE Obl at some agreed upon date repair and install UG residential services.		Customer Experience. Operate, Integrity	

Benefits	
1	Renafit the overall experience of our costomer by
Customer experience	increasing public safety or decreating customer nursances
Reflability	Decrease SAIDI or SAIFI
Economic Growth	Economic benefit for the community or state
Operate	Decrease operation is rues or costs
integrity	Harden the electrical system