

Case Study

2016 PA AWWA Conference Technical Sessions
WEDNESDAY, May 11, 2016
3:30pm to 4:00pm

Municipal Authority of Westmoreland County



NEPTUNE
TECHNOLOGY GROUP

AUTHORIZED DISTRIBUTOR



Alex Paris Contracting affiliated company

Since 2003, EAP Industries, Inc. specializes in the sales and service of Neptune Technology Group water meters, Radio Read Systems, software and related supplies

- Exclusive Neptune TG Assigned Territory in Central and Western PA
- Sole Neptune TG Level 1 Distributor in 34 counties
- Dedicated, assigned municipal sales team
- System Software Installer & troubleshooter on call
- Customer Service
- Stocking warehouse



NEPTUNE
TECHNOLOGY GROUP



www.NeptuneTG.com

Neptune Technology Group Inc. is a pioneer in the development of automatic meter reading (AMR) and advanced metering infrastructure (AMI) technologies for more than 50 years. Since 1892 Neptune has continually focused on the evolving needs of utilities – revenue optimization, operational efficiencies, and improved customer service.

- Pioneering industry leader
- Installed base of more than 25 million water meters and a loyal base of over 2,500 utilities
- **Only US-based water meter foundry,** located in Tallassee, Alabama
- Neptune's quality system is registered to the **ISO 9001:2008** management system standard.
- All products forward and backward compatible
- Proven solutions for all types of metering demands



- A Home-Town Story of doing due diligence
- Big decisions for lasting investments

Copies of this formal Case Study are available at Booth #8

MUNICIPAL AUTHORITY OF WESTMORELAND COUNTY

WESTMORELAND COUNTY, PENNSYLVANIA

CASE STUDY



HIGHLIGHTS

- Saving time and labor during installation of the E-Coder®|R900® wireless, integrated encoder and MIU
- R900® handles hard-to-read meters as well as typical installations
- Reading 2x as much in same amount of time for selected routes
- Looking to consolidate metering routes as well as reading positions
- Authority can now compare production vs. billed water to quickly identify Non-Revenue Water



Neptune's R900® RF Technology Sets Walk-by Meter Readers on Easy Path to Migration

The Move to AMR Starts with a Radio Contest
 Located in the picturesque southwest corner of the state, Westmoreland County was the Pennsylvania colony's first county west of the Allegheny Mountains. The area boasts golf legend Arnold Palmer and television personality Fred (Mister) Rogers among its native sons, and is currently home to a population of roughly 363,000. It's also the home of the Municipal Authority of Westmoreland County, which provides water services to 125,000 accounts in five counties covering an area of more than 1,000 square miles. Nearly 95 percent of the served customer base is residential.

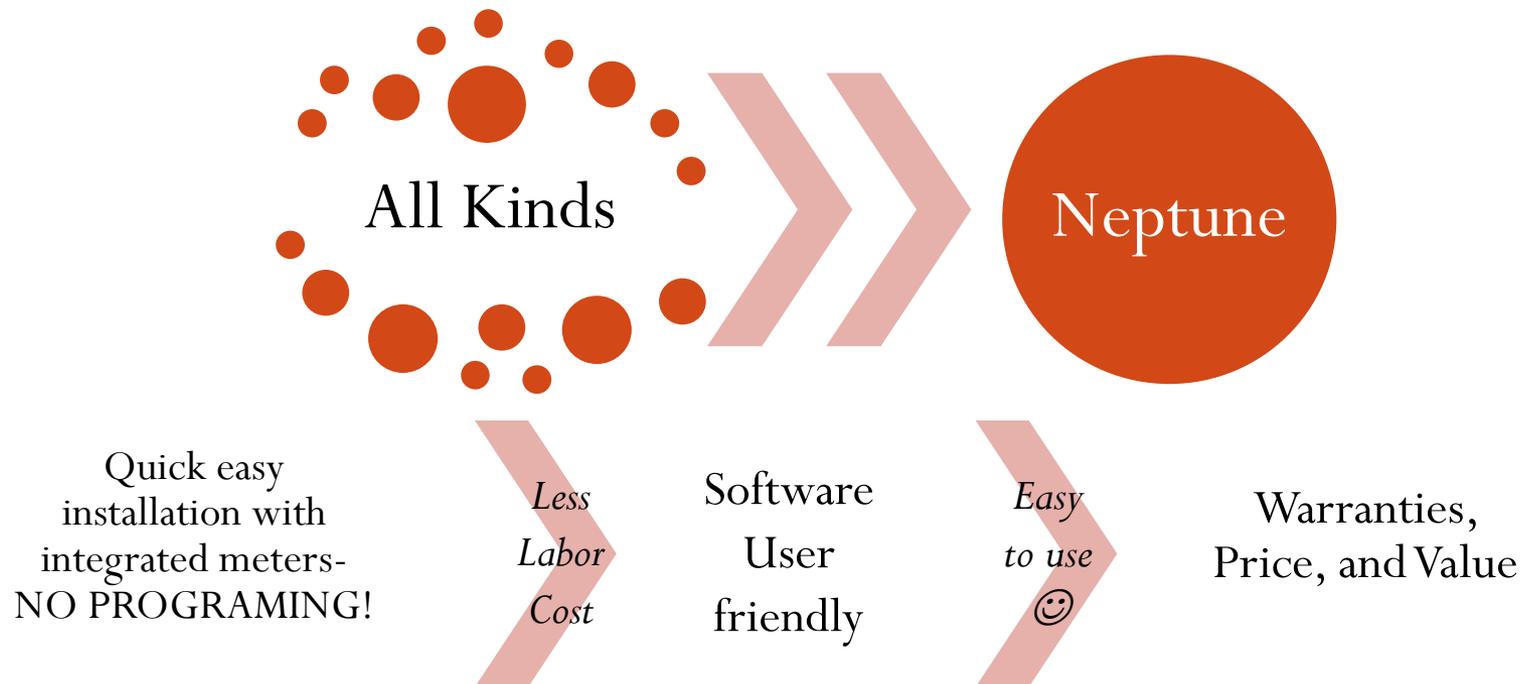
When Assistant Manager Tom Ceraso first joined the Authority in 1986, water meters were read using a dialed system where homeowners called in with their readings. From there, Westmoreland County adopted a touchpad reading system. For

decades, necessity dictated a piecemeal approach to installing meters, leading to an eclectic hodge-podge of models from different manufacturers. By 2011, Tom – who had returned to the Authority after 11 years – decided to move the team toward a radio frequency (RF)-based reading system. After sending out a Request For Proposals, Westmoreland conducted a unique pilot study; it would assign different reading routes to five different metering companies, including Neptune Technology Group. Beginning in summer 2011, the Authority looked at each competitor's walk-by/ drive-by RF system according to 1) compatibility with a mixed meter population, 2) the ability to collect readings quickly and accurately, and 3) ease of transferring data to existing billing software.

"The metering software had to be able to upload readings to our 'homegrown' billing system that we didn't want to have to change," said Ceraso. "We tested monthly meter routes for our larger

Unique Pilot Study: Goals

- Compatibility with a mixed meter population
- Ability to collect readings quickly and accurately
- EASE of transferring data to existing billing software



Works with other Manufactures Water Meters with MIU (Meter Interface Unit)



Wall Mount on
outside of building



PIT version through
the lid Antenna or
with MIU

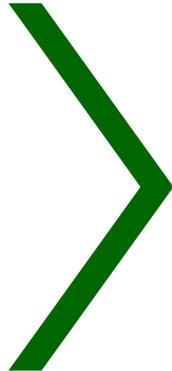
Boost your water intelligence.



Walk-By

Drive-By

Fixed Network

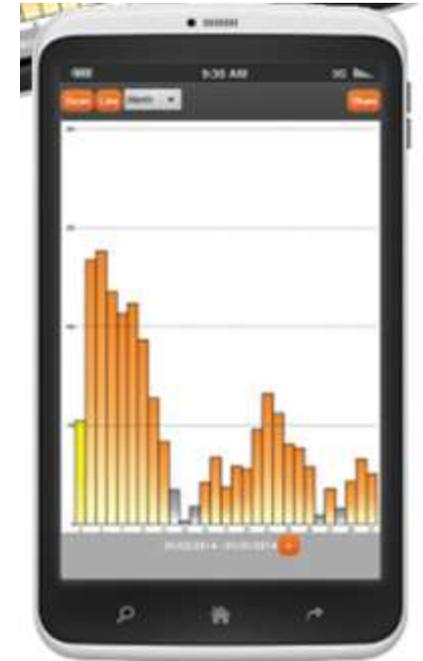


Integrate New Technology Seamlessly

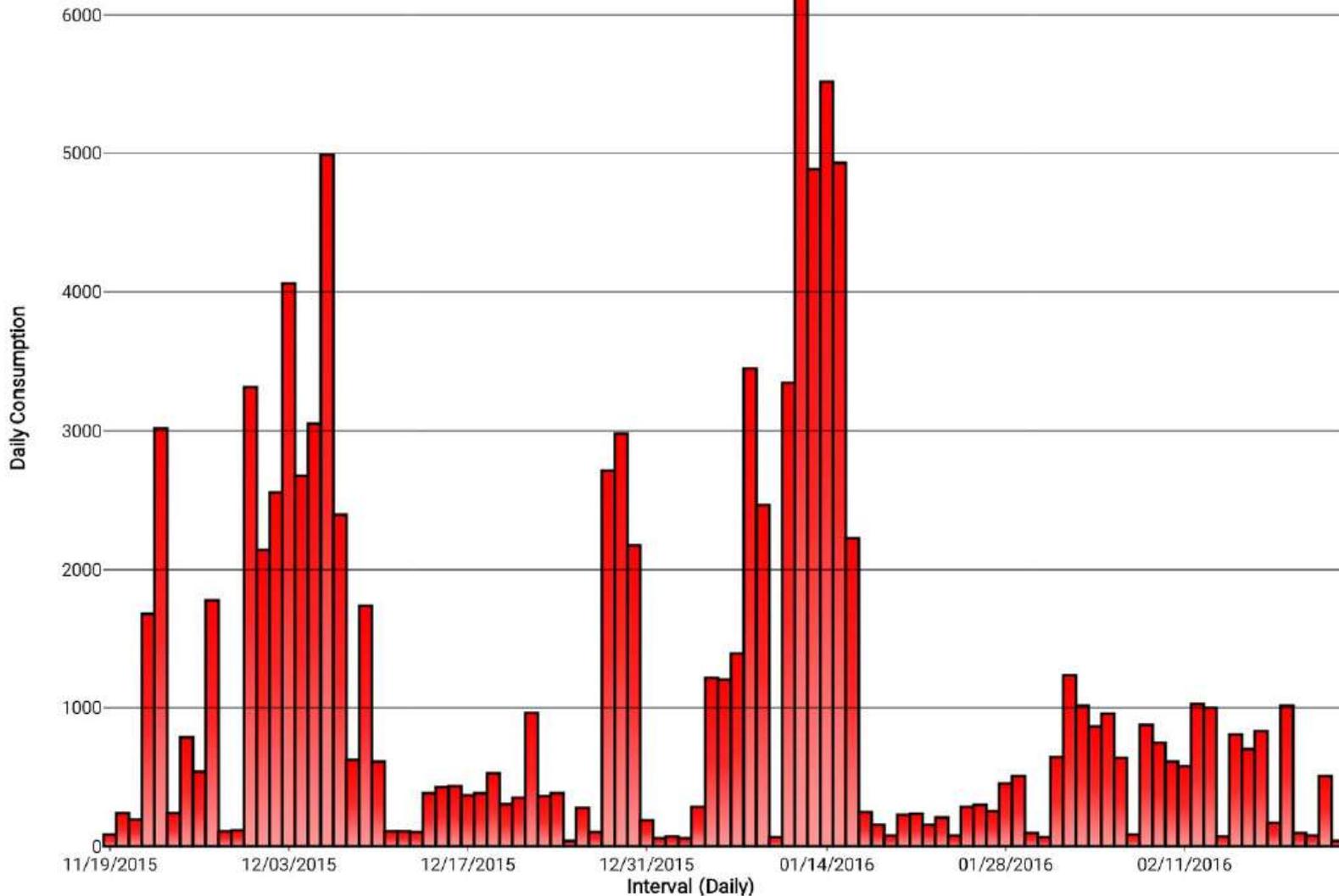


N-GO AP; Technology on your Android Smart Phone!

- ◆ Pair Neptune's NGO™ app to your Belt Clip Transceiver to collect 96 days of consumption data instantly in the field for proactive customer service.
- ◆ This on-the-spot, on-site presentment of how much water they used and when, helps head off customer complaints regarding high water bills, reduce delinquencies, and avoid write-offs.



E-Coder R900i Data Logging Report
MIU#: 1830788950 for 11/19/2015 through 02/23/2016 - 5/8" - 1" T-10, GALLONS



Data Collection Software

“It’s more than a meter usage read...”
Technology Evolves with Enhancements

- **RF Technology offers you:**

- Safety
- No more touchpads
- Convenience
- Time savings
- Enhanced Customer Service
- Data Logging
- Detailed Reporting
- Leak/tamper detection

and much more!

- **Besides the read, Smart Meters answer these questions:**

- Customers experiencing leaks
- Customers not using water
- Customers potentially stealing water
- Meters not operating properly or broken
- Customers with backflow
- Walk Order Report and Productivity Report
- Notes attached to meters

Sample Zero Consumption Report

The Zero Consumption Report presents data relating to accounts that show no consumption for a particular period. For field descriptions and more details on what this report

Page 1 of 2

03/18/2012

N_SIGHT R900 Zero Consumption Report

Route	Reader Id	Read Seq	ID Cap	Reading	Address	Cons Days	Date/ Time
B1-J1R1-01-MeterF	FIXED	030400	1470216302	299316	20-8 R900v3P 138.02 Sin	35 Days	02/28/2012 05:32:19
B1-J1R1-01-MeterF	FIXED	035900	1450256552	000000	21-12A R900v3P 138.0202	35 Days	02/28/2012 06:01:24
B1-J1R1-01-MeterF	FIXED	036800	1450258174	000000	21-18A R900v3P 138.0202	35 Days	02/28/2012 06:04:07
B1-J1R1-01-MeterF	FIXED	036900	1450256520	000000	21-17A R900v3P 138.0202	35 Days	02/28/2012 06:02:14
B1-J1R1-01-MeterF	FIXED	037200	1470215247	019325	22-29 R900v3P 138.02 Low	35 Days	02/28/2012 05:58:05
B1-J1R1-01-MeterF	FIXED	037300	1470215246	342470	22-29A R900v3P 138.02 Hi	35 Days	02/28/2012 06:02:19
B1-J1R1-01-MeterF	FIXED	037900	1450258658	495997	22-27A R900v3P 138.0202	35 Days	02/28/2012 06:03:20
B1-J1R1-01-MeterF	FIXED	038300	1450115460	281816	22-25A R900v3P 138.02 Hi	35 Days	02/28/2012 06:04:04
B1-J1R1-01-MeterF	FIXED	038400	1450257534	000000	22-6 R900v3P 138.0202 Si	35 Days	02/28/2012 06:03:01
B1-J1R1-01-MeterF	FIXED	038700	1470214707	514474	22-24 R900v3P 138.02 Low	35 Days	02/28/2012 06:00:47
B1-J1R1-01-MeterF	FIXED	038900	1470195626	515013	22-23 R900v3P 138.02 Sin	35 Days	02/28/2012 06:04:03
B1-J1R1-01-MeterF	FIXED	040500	1450256462	554209	22-15 R900v3P 138.0202 S	35 Days	02/28/2012 06:04:31
B1-J1R1-01-MeterF	FIXED	041500	1450258860	000000	23-1 R900v3P 138.0202 Si	35 Days	02/28/2012 06:04:43
B1-J1R1-01-MeterF	FIXED	042300	1450258662	000000	23-4 R900v3P 138.0202 Si	35 Days	02/28/2012 06:04:07
B1-J1R1-01-MeterF	FIXED	043100	1470204820	490974	23-20 R900v3P 138.02 Sin	35 Days	02/28/2012 06:02:43
						Total 35 Days:	15
B1-J1R1-01-MeterF	FIXED	033900	1470192410	649706	21-1 R900v3P 138.02 Sin	15-21 Days	02/28/2012 05:32:15
B1-J1R1-01-MeterF	FIXED	036200	1450257467	651788	21-18 R900v3P 138.0202 L	15-21 Days	02/28/2012 06:03:10
B1-J1R1-01-MeterF	FIXED	042000	1450257472	645899	23-25 R900v3P 138.0202 S	15-21 Days	02/28/2012 06:03:28
B1-J1R1-01-MeterF	FIXED	160000	1450106507	155805	6-17 R900v3P 138.02 Low	15-21 Days	02/28/2012 05:58:31
						Total 15-21 Days:	4
B1-J1R1-01-MeterF	FIXED	042400	1470206676	647709	23-24 R900v3P 138.02 Sin	8-14 Days	02/28/2012 06:02:09
B1-J1R1-01-MeterF	FIXED	118000	1450102745	156390	6-23 R900v3P 138.02 Low	8-14 Days	02/28/2012 05:32:13
B1-J1R1-01-MeterF	FIXED	162000	1450103737	154189	6-19 R900v3P 138.02 Low	8-14 Days	02/28/2012 06:01:43
						Total 8-14 Days:	3
B1-J1R1-01-MeterF	FIXED	033600	1450256574	650896	21-28 R900v3P 138.0202 S	3-7 Days	02/28/2012 06:04:19
B1-J1R1-01-MeterF	FIXED	113000	1450103798	156051	6-2 R900v3P 138.02 Hiq	3-7 Days	02/28/2012 05:54:03
B1-J1R1-01-MeterF	FIXED	119000	1450102836	156183	6-7 R900v3P 138.02 Hiq	3-7 Days	02/28/2012 05:39:19
B1-J1R1-01-MeterF	FIXED	120000	1450102837	155805	6-22 R900v3P 138.02 Low	3-7 Days	02/28/2012 05:37:15
B1-J1R1-01-MeterF	FIXED	121000	1450102838	155884	6-9 R900v3P 138.02 Hiq	3-7 Days	02/28/2012 06:02:37
B1-J1R1-01-MeterF	FIXED	122000	1450102839	155755	6-20 R900v3P 138.02 Low	3-7 Days	02/28/2012 06:03:07

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commercial meters, integrating each competitor's live reads and then moving those reads into each competitor's own software." The water metering companies went through a trial-by-fire when the Authority actually billed from their differing systems, simultaneously, for a period of three to four months.

Neptune's Ease of Integration is Integral to Success

In short order, Neptune's N_SIGHT™ R900® software rose to the top of the "want" list. "Our IT people liked the ease of Neptune's software and its seamless integration with our billing system," said Ceraso. He added that its process required fewer steps and checks to maintain the integrity of the data than the other brands – and, unlike some other software packages, Neptune's never lost the data in the transfer.

Another key factor in the Authority's decision would be ease of installation. "We have 14 full-time personnel who read on a daily basis, as well as some who fill in," Ceraso said. "Whatever meters and equipment we would install, it all had to be simple, and it had to work with all other manufacturers' equipment already in the field."

Neptune offered a solution that met the need for integration in more ways than one. As part of an overall R900® System, the E-Coder®)R900i™ combines a solid state absolute encoder register with an RF meter interface unit (MIU) into one wireless package. "With the integrated encoder and MIU, there's no having to fit a transmitter on the outside of the property, no wiring to worry about. It saves so much time," Ceraso added. "We've had 10,000 to 11,000 accounts where we've never been able to read from outside. Now we can install the same unit for these customers as for any other customers – and Neptune was the only company to offer this."

Consolidating Routes and Positions

In April 2012, Westmoreland County entered into a purchase agreement with Neptune through distributor EAP Industries, Inc. Working with Neptune Territory Manager Bob Scheidemantel and EAP's Sharon DeSignore and Russ Cipriani, the Authority began its large meter changeout portion of the project. With funding in place, Ceraso and his team began the residential implementation in

March 2013, with plans to stage it out as time permits. "It's been a smooth transition," he said. "EAP has had the meters we needed in stock, with never a shortage. They've also provided training for our staff on how to read using our new RF handheld devices. Everyone, including our fill-in readers, has had no problem with the new equipment; and we've yet to lose a read."

Because the majority of meters in the system are still manually read at the time of this writing, the Authority continues with a walk-by reading program. However, it's already seeing the difference Neptune's R900 RF technology makes. For instance, even with the mix of traditional and AMR reading, the Authority doesn't need to operate two parallel reading systems. "Our Neptune system reads all the meters in our books (routes) without any reorganization or renumbering. It equally handles our keyed reads while automatically grabbing the RF reads."

That ability to literally pull reads out of the air is already saving Westmoreland County time and labor. Depending on the saturation of RF-outfitted encoders, meter readers can now read twice as

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– Tom Ceraso, Assistant Manager, Municipal Authority of Westmoreland County

much in the same amount of time for selected routes. Based on this accelerated data collection, Ceraso said, "We're only months into our new residential reading system, and we're looking at consolidating certain books."

On a related note, Ceraso pointed to another eventual goal of the changeout: "We're also looking at downsizing reading positions and reallocating those personnel to other departments where they're needed – possibly as meter installers." This would relieve the County Authority of the cost of hiring new workers while at the same time preserving jobs and maximizing resources.

Data Logging Solves Mysteries with Consumption History

Another benefit of the Authority's R900 System is proof of a customer's water consumption through data logging. "We've had customers who've questioned the accuracy of their bill, and this is a great tool to show them that history; to say, 'Look at this chart, you're constantly using this much water...'. Sometimes, a customer will want their old meter tested for accuracy. Now, we can remove the meter and then put on an E-Coder)R900i unit temporarily. We can log the short-term history over a couple of days and, with the time-stamped data, we can even find leaks early. We've never had data logging before; but, as we build the system out, it's something we're going to use more and more."

In one case, the Authority provided data logging information for the meter of a customer who'd had issues with historically high water consumption. The cause was quickly discovered – and proved through usage graphs – a leaking commode in a never-used pool house on the property. A years-long problem had been solved in a single day with historic data.

Flexible, Functional, and Fully Future-Ready

Ceraso is enthusiastic about the R900 System's flexibility in terms of both migration and function. Currently, the Authority is investigating the placement of an R900® Gateway fixed network

data collector within a borough containing a large number of RF-equipped encoder registers. He also mentioned how targeted fixed network data collection would be ideal for hard-to-access accounts, such as gated commercial and industrial customers. In all these applications, the meters, encoders, RF MIU technology, and N_SIGHT R900 host software remain the same, allowing for a seamless transition.

The R900 System is proving its versatility with regard to functionality, too. "We have pressure zones because we have a lot of hilly areas here," said Ceraso. "We also have demand areas where we want to look at how much water we're pumping compared to what we're billing. We're starting to coordinate changeouts in these places for RF saturation, so that we can drive in and discover Non-Revenue Water in a short period of time instead of every 90 days."

In a matter of mere months, the Municipal Authority of Westmoreland County has gone from walking manual routes to running an RF-based metering system that allows it to go far beyond basic meter reading and billing. Ceraso likes what he has seen and anticipates even more benefits in the future: "The installation of Neptune's R900 technology will have a spin-off effect throughout every department across the Authority because of the efficiencies it's going to create."

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