Atestado de Capacidade Técnica

Proyecto: Centerpoint

Módulo: SCADA/OMS/MWM

CenterPoint Energy, USA

Project Tittle	CenterPoint Energy's Advanced Distribution Management System
Identificação da concessionária/companhia atendida	CenterPoint Energy Inc., USA
Identificação e contato do profissional responsável pela emissão do atestado	**ADMS** Kevin Ding Director, Control Systems kevin.Ding@centerpointenergy.com Escritório: + 1 (713) 207-2599 Celular: +1 (713) 516-7143 **Service Suite (MWM)** Michelle Turner Manager, Field Ops Services & Solutions 713-207-5306
Identificação do produto, fornecedor, módulos e versão instalada	Identificação do Produto: Network Manager Fornecedor: ABB Módulos: SCADA, DMS, OMS, MWM, Business Analytics. Versão instalada: NM 6
Número de unidades consumidoras atendidas pela concessionária/companhia	2.3 Millions
Local do Projeto	Houston, TX - USA
Dados do contrato	Prime Contractor, single entity. Awarded November 2010; completed March 2015.
Solução	• Network Manager ADMS com SCADA, Aplicativos de Rede (VVO, FLISR), OMS, Service Suite e Focalpoint Business Analytics. • Service Suite em mais de 2240 técnicos e 230 despachantes em todas as áreas operacionais. Ele está sendo usado para serviços de gás e eletricidade e abrange todos os tipos de trabalho - desde trabalho de atendimento ao cliente de ciclo curto e trabalho de interrupção / problemas até manutenção e inspeção e projetos de construção mais complexos. Integrações estão em vigor para uma variedade de sistemas host, incluindo OMS da ABB para gerenciamento de interrupções e SAP para atendimento ao cliente e gerenciamento de ativos (CIS e EAM). • Para este Cliente em particular, o Service Suite é integrado ao ADMS para uma implantação mais rápida da equipe.
Fornecedor de aplicativos	ABB
Interfaces externas fornecidas	Interfaces do sistema: CIS, GIS (ESRI), ICCP, AMS, MDM, IVR, SAP, Service Suite (Mobile Dispatching).
Protocolos de comunicação com suporte para troca de dados com equipamentos da estação	DNP 3.0
Sistema substituído	Schneider Distribution SCADA. Oracle e homegrown OMS.
Status do Contrato	Concluído (go-live operacional em março de 2015). Por favor, encontrar detalhes on-line em: • Comunicado de imprensa da ABB 2015-04-08Web URL: http://www.abb.com/cawp/seitp202/0bc2fe9631003173c1257e21005d1f26.aspx • Artigo de 3o analista (GTM Research), lançado em 2015-04-16https://www.greentechmedia.com/articles/read/How-CenterPoints-Integrated-Smart-Grid-is-Paying-Off Sob o contrato de manutenção do sistema
Atestado de Capacidade Técnica	Disponível no documento *3- 10.4.1 Atestado(s) de Capacidade Técnica*

How CenterPoint's Integrated Smart Grid Is Paying Off

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Back in 2009, Texas utility CenterPoint Energy landed a $200 million Department of Energy stimulus grant to carry out a $750 million smart grid project, one of the biggest in the country. It started with 2.3 million smart meters capable of detecting power outages and helping field crews and customers know how quickly they could be fixed, and added some 750 "Intelligent Grid" devices to reroute power across storm-damaged distribution circuits in seconds. Finally, it has connected it all with a high-speed wireless network and an underlying advanced distribution management software (ADMS) platform, one that's collecting and analyzing data for utility departments from field crews to financial planners.

Early this month, the utility serving the greater Houston area got a thumbs-up from DOE officials for turning that investment into tangible value. On the outage management front, CenterPoint has signed up more than 400,000 customers to its outage auto-alert system, giving them up-to-date notification of when power will be restored. At the same time, it has used its smart meters' outage detection capabilities to restore power to more than 1 million customers without them having to pick up the phone -- the traditional way that utilities learn of power outages on the edges of their network.

As for its Intelligent Grid project, also known as a fault location, isolation and service restoration (FLISR) system, it has prevented more than 102 million customer outage minutes in more than 1,000 outage events since 2011, according to CenterPoint's latest statistics. The IG system now covers about 13 percent of

CenterPoint's distribution system, serving about 417,000 customers, and the utility plans to take it system-wide over the next decade or so.

Many utilities are using smart meters as outage management tools, to send detailed outage information to utility crews and blacked-out customers. Others have deployed self-healing FLISR systems to restore power to as many customers as possible before crews arrive, during everyday outages or in the midst of major storms.

But CenterPoint has also paid attention to the bigger picture, in terms of making sure it has integrated in-the-field and back-office IT systems to support multiple day-to-day and long-term needs. GTM Research recognized that work in 2013, when it named CenterPoint as one of the three most "mature" smart grid utilities in the country.
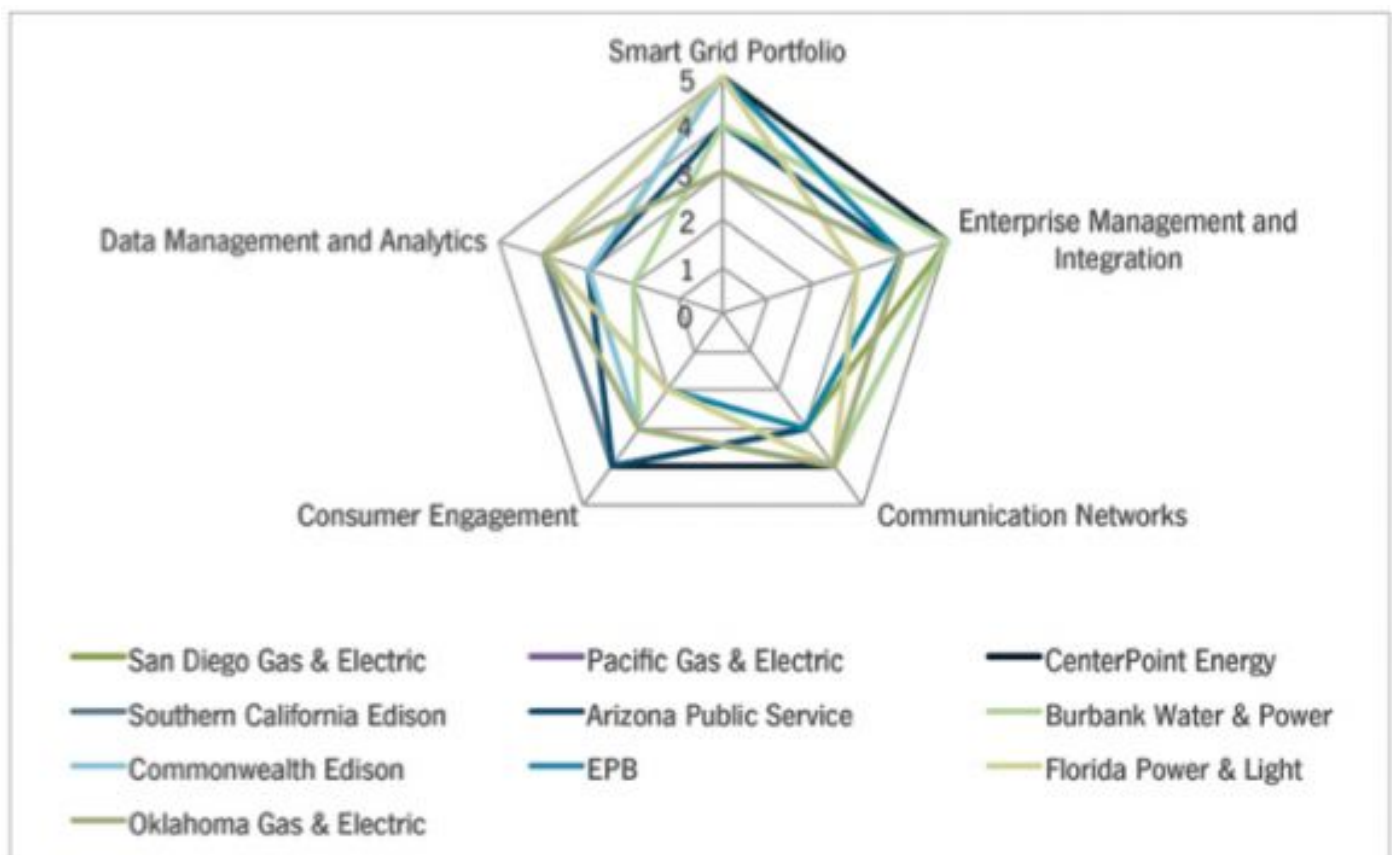
Now CenterPoint is looking at how it can put this technology to broader use, like predicting transformer failures before they occur, or forecasting the effects of new rooftop solar and changing customer loads on the distribution grid, according to Kenny Mercado, CenterPoint's senior vice president of electric operations.

"We now have a very real system that's integrated into our advanced metering and enables us to have control and visibility into our distribution system," he said in an interview this week. That includes some complex integration of smart meters from Itron, meter data management software from Siemens' eMeter, high-speed wireless radios from General Electric, and FLISR equipment and ADMS from ABB.

"We're thinking of this as an enterprise foundation for the future," Mercado said. Given the changes coming to the grid with the rise of rooftop solar, energy storage, and energy-smart home and businesses, "within 10 years or sooner, the distribution grid will look a lot different -- and we can't wait until it's too late. We need a system that's ready to absorb these dynamics now."

Merging technology, people and planning to reduce time, scope of outages

When CenterPoint started on its smart meter deployment, "the path we went down was around outage management," Mercado said -- a natural focus for a utility that had just suffered through 2008's Hurricane Ike, which blacked out about 1.9 million customers and left some without power for weeks after. Beyond collecting interval billing data, conducting remote connect and disconnect functions, and other standard advanced metering infrastructure (AMI) fare, CenterPoint wanted to make sure that its new smart meters could send power-off notifications and signal when power was restored, in a way that could help system operators and field crews restore power as quickly as possible.

CenterPoint began by working with ABB to map out its distribution grid, and match the location of smart meters to the SCADA system that monitors and controls grid points down to the substation.

That's a fairly fundamental task, but important to get an accurate coordination of what the smart meter data is telling the system, and what's coming in from the substations, field crews and other parts of the outage-solving puzzle. To allow them to share data with confidence, "we needed to evaluate our processes, input the data from the meter, and take out the bad data," he said.

Completing that work, however, can allow dispatchers and work crews to trust that the automated outage detection data they're getting through their radios, laptops or mobile devices is accurate. "That allows you to stream bits of data, and that information comes into their console, and that allows them to make decisions faster," he said. All told, CenterPoint estimates that outages can now be identified 50 percent to 75 percent faster than the old-fashioned methods of matching customer phone calls to locations on the map, and sending crews to drive around the area in trucks looking for faults.

That kind of cross-platform data sharing and visibility became even more important when CenterPoint started to turn on its self-healing Intelligent Grid system. This network of reclosers and switches, connected via high-speed wireless to CenterPoint's distribution operation center, can "clear a fault, isolate the fault, and close a normally open switch, using the ABB Tropos wireless communications, in 108 milliseconds," Gary Rackliffe, ABB's vice president of smart grids for North America, said in an interview this week.

FLISR systems don't repair downed power lines, but they do reroute electricity around the damaged circuit, restoring power to as many customers as possible before repairs take place, he said. "Instead of having a truck drive out there to do the switching procedures, then driving out to repair the fault, you can send the truck straight to the fault," he said -- although that also requires tight

coordination between the people running the FLISR system and dispatchers and field crews.
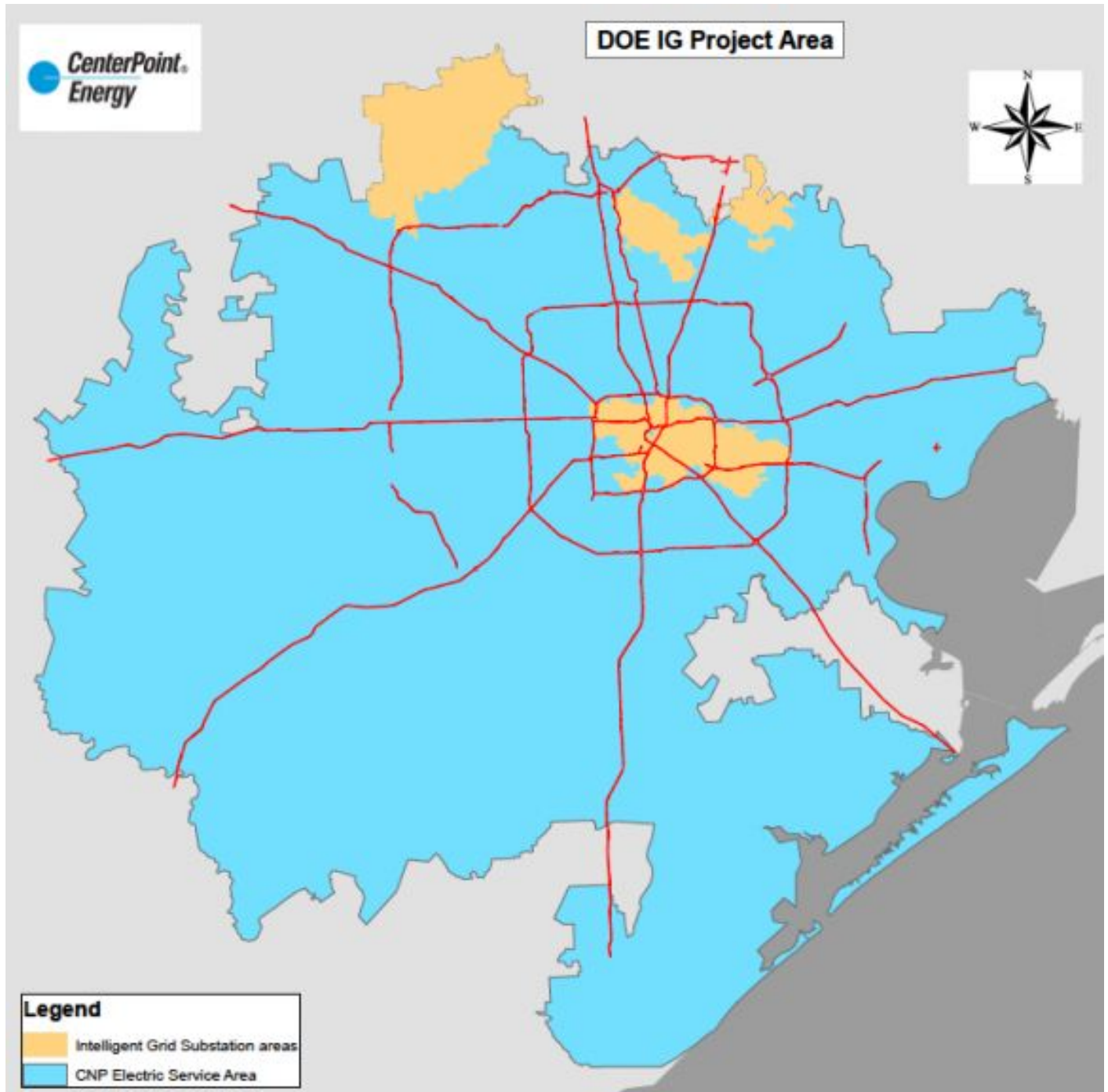
All of this information is also tied into CenterPoint's Power Alert Service for customers, Mercado noted. Lots of utilities are promoting text, email or social media alerts and updates to tell customers when they can expect to have the power back on after an outage. But if those updates aren't accurate -- or if they

come hours after the lights have already come back on -- they can turn customers off in ways that defeat the purpose of having them in the first place.

"In the business of electricity, the last thing you want to do is lose the trust of the customer," he said. "We spent six months or so testing, and testing, and testing some more" before taking the service live. CenterPoint has also tapped IBM and SAP for a customer service software platform to manage these tasks.

Some of the same trust issues apply to CenterPoint's own employees, he noted. Utility field crews need to trust that the new technology is giving them the correct information about which circuits are energized and which aren't -- and making mistakes on matters like these can be deadly. Meanwhile, formerly separate departments in the utility were being asked to share data in ways they hadn't before, he said.

"As the workforce begins to receive a higher level of functionality they're not familiar with, you've got to give them time to learn it, to use it," he said. "When we started our project, we had about 100 or 200 people who were the experts. It took awhile for our company and vendor community to get confidence in the products we're going to integrate into our systems. You start with 10 people, you move to 100 people, and then to 1,000 people."

Making advanced grid visibility and control "as vanilla as a wood pole"

The past few years of experience with its new system has made CenterPoint "very confident today that the outage data [and] the metering data is the real stuff," Mercado said. "That gives us a fundamental opportunity to take the work we do and apply it to this next generation" of technology.

One of the first items on the utility's wish list is applying its outage, ADMS and FLISR data toward predictive analytics, he said. The same data that helps grid

operators and field crews find outages as they occur could be used to predict them before they happen, particularly at typical times of grid stress, such as hot summer afternoons. "If we could predict that outage in advance, wouldn't it be nice if we could replace that transformer at 9 a.m. when you're still at work? We're not there yet, but that's our objective," he said.

ABB's outage analytics software adds some other important dimensions to the way CenterPoint manages its grid before, during and after big storms, Rackliffe noted. First, "when a storm is forecasted, you can look at past storms, the extent of damage, and where it's going to be located in your service territory, and you can do a better job of supply chain management" in terms of staging trucks and crews, preparing replacement transformers and cables, and warning customers of what's expected to come.

After-storm analysis, in turn, can help the utility "learn what needs to be done to better harden the grid to prevent the next outage." Utilities are already collecting outage data on a feeder-by-feeder basis, mainly to comply with reporting regulations, which can also be applied to the task of predicting future problems, he said.

"We do a lot with business intelligence, looking at feeder performance," he said. "It's a layer we've integrated into our ADMS to provide visualization on feeder and circuit performance, so you have the data to do the predictive analytics."

Mercado noted that CenterPoint is also looking for data to help it manage distributed energy resources on the grid. While Houston doesn't have nearly as much rooftop solar as other Texas cities like Austin and San Antonio, "we all know that the future is going to include a lot of power supply and load management that will be dynamic -- it turns on and turns off fast," he said. "We want this system to be able to learn, to understand the behaviors of consumers behind the meter."

In the meantime, CenterPoint is planning to continue rolling out its Intelligent Grid devices across its service territory over the next 10 years or so. "We want to make that become as generic, as vanilla, as a wood pole" that bears the transformers and wires that bring power to customers today, he said. "In our eyes, it's standardized now. The type of hardware, the type of software, the type of integration we need -- it's no longer high-risk."

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https://www.greentechmedia.com/articles/read/How-CenterPoints-Integrated-Smart-Grid-is-Paying-Off#gs.APg3WPw