



# **TURNING YOUR CIS INTO A SMART GRID READY SYSTEM**

**PROVIDED FOR**



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## EXECUTIVE SUMMARY

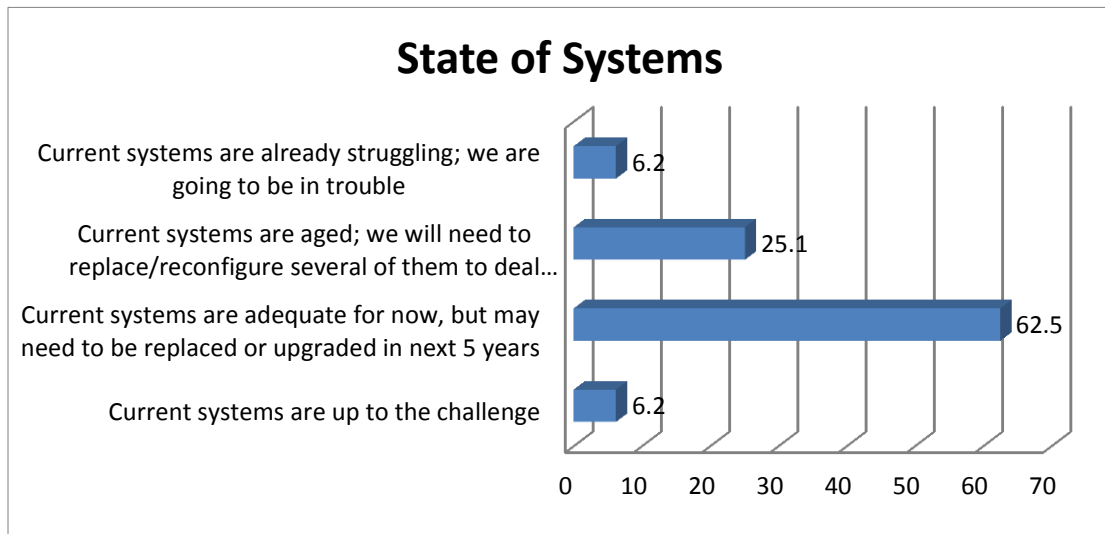
A utility's ability to achieve the promise of smart grid technologies will be directly related to its capacity to identify, implement and optimize the appropriate technology solutions. At times, it may mean large, robust and interrelated systems, such as comprehensive advanced metering infrastructure (AMI) coupled with a robust meter-data-management (MDM) solutions. Often, though, the right technology is not necessarily a large, robust system, but rather a specialized piece of software that can help achieve the promise of smart grid technologies without the costs and resource commitments associated with massive system implementations or upgrades.

When the Department of Energy (DOE) announced the smart grid stimulus grants, they helped to accelerate a movement toward dynamic pricing that was in the early stages of formation. As the DOE stated:

*These investments will create the infrastructure and expand access to smart meters and customer systems so that consumers will be able to access dynamic pricing information and have the ability to save money by programming smart appliances and equipment to run when rates are lowest. This will help reduce energy bills for everyone by helping to drive down "peak demand" and limiting the need for "stand-by" power plants – the most expensive generation there is.*

Although not all state jurisdictions have adopted dynamic pricing for all classes of customers, it is clear that the industry is trending in that direction. The vision promulgated by the DOE is as difficult to achieve, as it is bold.

The industry has a long history of predictable pricing based on monthly meter reads with no consumer access to real-time consumption or pricing information. The current regulatory initiatives related to the smart grid has created a migration to a consumer-enabled environment that requires utilities to measure consumption at frequent intervals and provide consumers with real-time pricing information. This movement, while valuable, has *significant* impacts to the software systems used at utilities. Indeed, a recent Five Point Partners survey revealed that CIOs are quite concerned about the ability of their systems to handle the demands of the smart grid:



With nearly 94 percent of utility CIOs reporting that current systems will need enhancement or replacement in order to handle the functionality envisioned by the DOE, it is clear that utilities will have difficult choices and, of course, will be under tremendous pressure to find solutions that are affordable and effective.

This is not an easy task and will require utilities to clearly understand the complex and changing regulatory environment, utilize effective technology planning, seek solutions that optimize their operational goals and, of course, implement them.

## THE REGULATORY ENVIRONMENT

The movement toward a more modern grid finds its roots in the Energy Policy Act of 2005 (EPA) and the Energy Independence and Security Act of 2007 (EISA). More specifically, Title XIII of the EISA outlined 10 characteristics of the smart grid that would help improve our nation's electrical grid. These ten characteristics helped guide industry dialogue and provide focus for regulators, utilities and the technology vendors who serve the industry. Among other things, they envisioned a real-time sharing of consumption and pricing information with consumers.

Not long after, The National Association of Regulatory Utility Commissioners (NARUC) issued 10 resolutions to help guide state regulatory commissioners' efforts

to formulate policies in their respective states. Overall, NARUC's resolutions provided a good reminder that "development of smart grid standards can best be achieved through a partnership among the states, the federal government, and industry." They also stressed that state regulators have authority over issues related to cost recovery for investments and expressed agreement with certain technical aspects of the smart grid, such as robust cyber security.

While there are certainly some jurisdictional points of friction between federal and state regulators, it is clear that they both see the benefits associated with a more modern grid, complete with more engaged interaction between consumer and industry. Utilities, however, have paid careful attention to NARUC's statements regarding cost recovery and are working carefully with their regulators to ensure prudence of investments. This is a good thing for all of us who wish to avoid the type of boom mentality that accompanied the "dot-com" movement of the latter part of the last century.

This is particularly true when it comes to investments that have the largest impact on consumers, both in terms of cost and real-time, visible impact. Utility billing and customer information systems (CIS) are at the front of those.

## **TECHNOLOGY PLANNING**

The best technology planning begins with an assessment of the business environment and drivers. For utility CIS and billing systems, that begins with an assessment of what will be required of those systems in the coming years. As discussed, the smart grid environment envisioned by federal and state regulators holds real-time, dynamic pricing as a core benefit.

Many utilities currently offer dynamic pricing to large commercial and industrial customers and use a variety of software systems to provide that functionality. The smart grid movement, however, envisions providing dynamic pricing to smaller commercial and residential customers as well, which represents a significant shift for utilities operating under that regulatory directive. Five Point Partners Strategy, Research and Analysis division recently asked utilities about dynamic pricing. In that survey, 19 percent of utilities indicated that they currently offer dynamic

pricing/time of use (TOU) rates to residential customers, but 25 percent indicated that they expect to do so within the next five years. Similarly, for commercial customers, 25 percent currently offer dynamic pricing/TOU rates, with 34 percent expecting to do so within the next five years.

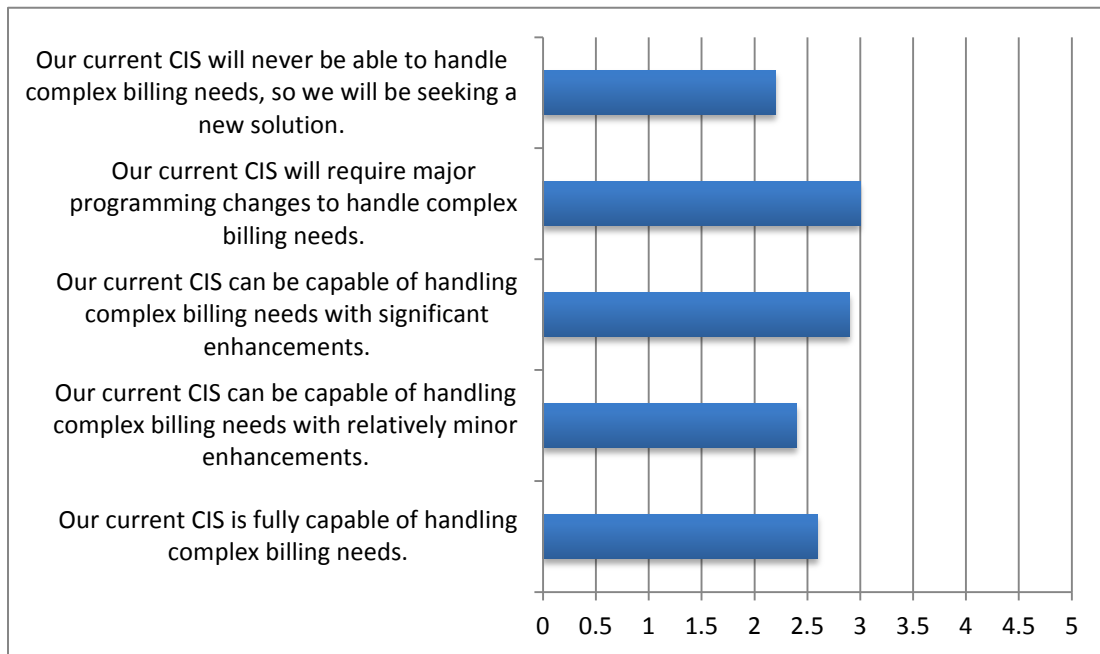
These survey results indicate that the use of dynamic pricing is expanding to include all customer classes at utilities. Moreover, as demand response and other pricing mechanisms, such as day-ahead pricing, continue to gain favor, the billing environment will become even more complex.

This is especially true when we examine how the future may evolve, particularly related to the staggering volumes of data and billing determinants that may need to be captured and processed. If rates eventually require even more granular information and more innovative structures in order to bill, the traditional CIS systems found in the market today will be severely challenged to perform the appropriate rating in the required volumes. They may even grow to the point of exceeding the capacity of existing MDM solutions.

Considering this, utilities would be well served to anticipate large volumes of data and adopt an architecture that can scale to meet this need. Doing so now, while the data streams are more manageable, will be helpful to prepare for larger volumes and increased complexity later. A failure to account for these trends may place utilities at an operational disadvantage – and perhaps even stress existing CIS system to the point of failure – should large-scale adoption of dynamic pricing occur. As utilities formulate their technology plans for the future, they would be well served to consider these trends.

## **SEEKING OPTIMAL SOLUTIONS**

The effort to seek an optimal solution often begins with an analysis of the existing software platform. The ability to support dynamic pricing/TOU rates, of course, begins with an assessment of the CIS software used at utilities. Recent survey results demonstrate that utility CIS solutions are not optimized to handle dynamic pricing.



In this survey, respondents were asked to rank their agreement with the statements on a scale of 1 – Least Likely to 5 – Most Likely. As demonstrated in the graph above, there is little confidence among respondents that their existing CIS systems are fully capable of handling dynamic pricing and other complex billing needs without modification. Major programming changes and/or significant enhancement or configuration changes will be necessary for many utilities, if not a new solution altogether. In fact, in a related survey, nearly 35 percent of respondents indicated that they may need to purchase a new CIS solution and 31 percent indicated that they might pursue a major enhancement.

These results are driven from a recognition by utilities that dynamic pricing requires the use of large volumes of interval data that existing systems are ill-equipped to handle, as well as complex rate structures and classes that are beyond traditional utility CIS solutions. Additionally, the need to present real-time information regarding consumption and pricing is likely to strain existing customer portal applications, as well as the core CIS systems that feed them.

Such replacement or enhancement efforts are likely to require a heavy investment of resources – both financial and human – and may not be justified by the relatively narrow functionality that is needed. If the only reason to pursue a new CIS solution – or a significant upgrade to the existing solution – is because of a new requirement

related to dynamic pricing, utilities would be well served to consider the appropriateness of a stand-alone complex billing solution.

Such solutions are considerably less expensive and time consuming to implement and can be configured to easily integrate with existing CIS, MDM and related software solutions. They help prolong the value of existing technology assets by providing smart grid ready functionality without major system replacements or enhancements. In doing so, they provide increased return on investment (ROI) and require less capital investment.

Viewed generally, they are smart grid plug-in solutions and may represent the most cost effective and functionally robust means of meeting complex billing needs. As a nation we will soon be closing in on approximately 60 million installed smart meters – and growing. There is little question that smart meters continue to gain momentum and utilities that plan for their expansion and use, including supporting dynamic pricing that they enable, will be well prepared for the future.

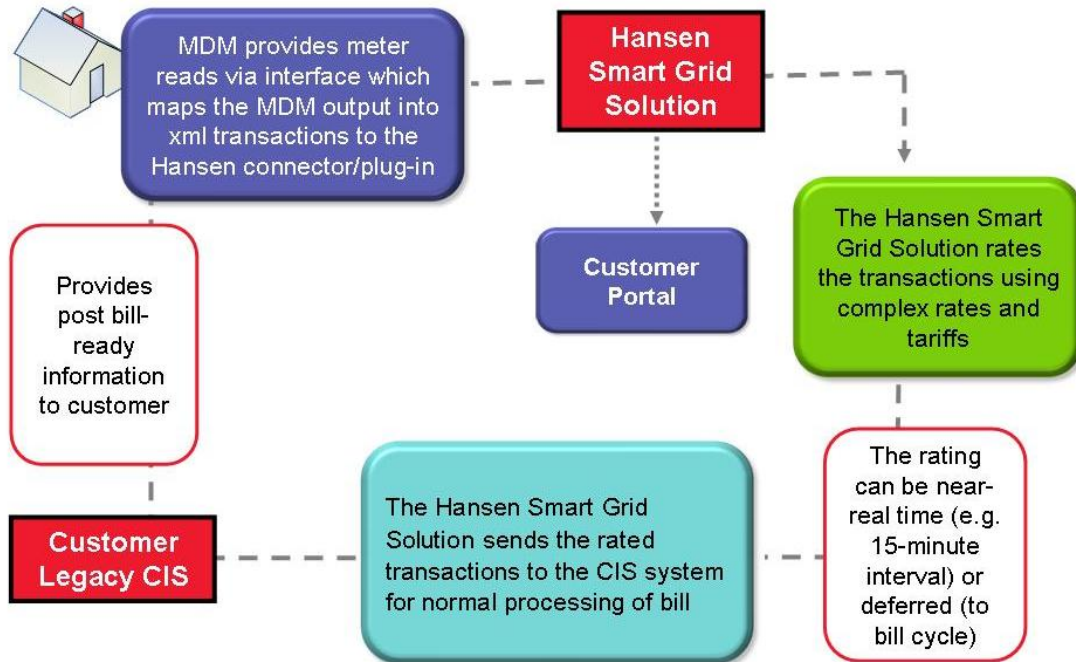
## **ENTER THE HANSEN SMART GRID SOLUTION PLUG-IN**

The Hansen Smart Grid Solution Plug-In is one such complex billing engine. Finding its source in the NirvanaSoft complex billing solution, which Hansen Technologies acquired in 2010, the Plug-In solution allows utilities the opportunity to avoid large scale CIS system replacement or upgrades and provides for robust complex billing functionality. Indeed, NirvanaSoft has been serving the complex billing market – primarily for large C&I customers for more than a decade. The solution is scalable to service smaller commercial and residential customers.

Hansen's Smart Grid Solution Plug-In is MDM and CIS agnostic and acts as an intermediary processor of the data coming from the MDM (or other consumption measure source) where it processes the rules associated with multiple rates and tariffs in dynamic pricing then pushes it back to the CIS to perform its standard tasks such as billing, collections and accounts receivable.

These represent important feature sets because they allow a utility to meet dynamic pricing for all classes of customers from residential to large commercial. Additionally,

it allows for an “under the hood” replacement of the bill calculation functionality without occurring large-scale disruptions to on-going operations, and all at a reasonable price when compared to major enhancements or replacements to existing CIS systems.



Utilities faced with providing complex billing, yet lack the functionality within existing CIS systems are faced with limited choices. They can either undergo the expense and effort associated with large scale CIS replacement or enhancement efforts, or seek a stand-alone complex billing solution. The Hansen Technologies Smart Grid Solution Plug-In represents a viable alternative for those companies seeking to provide complex billing functionality at a reasonable cost.