CASE 14-M-0101

Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision

IBM Corporation comments on Track 1 Policy Questions and PSC Staff Proposal

Please provide your professional background:

My name is Matt Futch, and I am the Global Policy Director for IBM Energy & Utilities division within the IBM Corporation. My primary responsibilities are to shape regulatory and policy strategies which align our client's goals with the policymaking and regulatory goals of their jurisdictional agencies. This work includes sharing best practices with regulators, drafting thought leadership pieces, and representing the company's formal positions on industry impacting policy issues including but not limited to data privacy, cybersecurity and renewable energy. This work entails the US states and markets in Southeast Asia, Europe and Africa. Appendix A to this filing provides my CV and professional background.

What is the purpose of this filing?

I am providing IBM comments to the NYPSC Staff Proposal filed in Case 14M0-0101on August 25, 2014.

What is the IBM Corporations role in the Energy & Utilities Industry?

IBM Energy & Utilities ("E&U") develops smarter energy capabilities in order to improve system reliability, customer service, efficiency, and return on infrastructure assets. These technologies help utilities better engage customers, reduce costs, manage distributed energy, and transform operations for a 21st century power system. Our business line has deployments in all major OECD and non-OECD countries providing system integration capabilities to over 100 million metered customers throughout our utility client base.

How are these comments organized?

I will start with a concise summary, then provide comments for specific questions as organized by the June 4 Track 1 and Aug 25 Staff proposals.[1] Our comments are high level and provide a set of foundational policy principles we find important to articulate while the Commission deliberates on a final order regarding Track 1 issues and the DSP construct. These principles are outlined in an effort to

[1] http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BDAF259A1-AE34-4869-BA66-E30F596DE3EA%7D

assist the Commission in avoiding common market design and technology issues we have observed in other global energy markets initiating this level of market transformation.

Principles of Policy Design for the DSP

There are three areas of policy which provide a foundational baseline for successful implementation of the DSP model. The principles outlined within each area can serve to enable cost effective deployment of technology while providing sufficient flexibility in the market structure for unforeseen effects. The three policy domains that enable the REV vision are listed below:

REGULATORY FRAMEWORK

a) Maintain a high degree of public transparency

b) Establish "Privacy by Design" to protect consumer data[2]

c) Focus on regulatory outcomes rather than inputs

TECHNOLOGY PREDICATES

a) Make cybersecurity a first tier requirement

b) Require an open-architecture model

c) Make interoperability a core design point

DSP BUILDING BLOCKS

a) Make the consumer a core business driver for the DSP

b) Focus on developing DSP functions, not technologies

c) Develop the DSP vision first, then apply cost-benefit analysis

[2] http://www.privacybydesign.ca/

ENABLING THE STATE OF NEW YORK'S RENEWED ENERGY VISION

The proceeding has indicated that all stakeholders to the REV share common goals in establishing a cost effective, consumer friendly and dynamic market place for the State of New York. By issuing a set of clear rules within these core policy domains, the Commission will help utilities and the vendor eco-system chart a staged and deliberate pathway and avoid costly investment "detours". As previously stated, IBM E&U's business line has been a lead system integrator or business partner in many smart grid deployments throughout the world. In these projects we have observed challenges experienced by regulators and utilities in a set of common issues which emerge when deploying both a set of new technologies and a fundamentally new way for customers to interact with the energy system. These issues stem from the fact that utilities must "keep the plane flying" while redesigning the plane (or grid). It is easy to institute a new regulatory framework that does not necessarily lead to the outcomes sought by both the regulator and the market players. Poorly designed or inflexible rules have the effect of constraining innovation rather than unleashing a new set of technologies that achieve policy goals. It is in the spirit of advancing the goals of the Commission and stakeholders that we offer the following three policy domains and associated design principles for due consideration.

REGULATORY FRAMEWORK

a) Maintain a high degree of public transparency

This is a general statement about the importance of transparency both as a code of conduct for this proceeding and as an operating imperative. Transparency will instill confidence within all energy "customer classes" the State of New York. Parties to this proceeding know that the regulatory process can seem arcane, complex, and confusing to the outside observer. This is due in part to a general lack of engagement from consumers to their energy use and to the general question of energy in their own lives. However, it must be noted that there are encouraging signs this dynamic is changing nationally

and more relevant to this proceeding, in the State of New York[3] . This new level of customer engagement is due to a myriad of factors, with technology and environmental awareness topping the list. What we observe both in the United States and in global energy markets is a consistent relationship between willingness to embrace cost and changes in the energy system and the perception of fairness or transparency of the system that produced these choices. Bringing it down to this proceeding; the easier and more accessible general data on the REV process is to BOTH internal parties AND external stakeholders, the less risk there is of a public backlash. Failure to achieving policy goals or outright reversal of REV goals is possible if there is a strong disconnect between market perception and the reality of the Commission decisions and process that lead to market change. It is a challenge for both the private sector and public sector actors involved in a process like REV to articulate a clean and coherent message as to why the energy system needs to change and how it will benefit consumers. Fortunately, we see the current process as having a high degree of transparency and parties currently engaged in the REV proceeding seem up to this particular challenge. As such, we commend the Commission on its commitment to maintain open access to all records of the proceeding, for enabling such a high degree of participation, and for keeping an eye on generating as much data as possible in the public record to demonstrate robust due process. With this much economic and societal value at stake, we encourage the Commission and all other stakeholder to value transparency to the greatest degree possible without compromising confidentiality, trade secrets, or any other critical security matter. With a consistent level of commitment to open process, the Commission can confidently forge ahead with a ground breaking series of decisions in the US regulated market.

[3] http://nyssmartgrid.com/wp-content/uploads/2014-Survey-of-Residential-Electric-Customer-Interest-in-Value-Added-Products-and-Services.pdf

b) Establish "Privacy by Design" to protect consumer data[4]

Protecting consumer's privacy is an important policy question for the conceptual development of the DSP. A key driver for assigning economic value to services and the operation of a more distributed network will involve a much greater volume, exchange, and potentially distribution of data. Some, but not all, of that data will contain inherently sensitive characteristics of commercial, residential and industrial load. We urge the Commission to review all existing regulatory regimes, such as the California Public Utilities Commission data privacy order[5], the Colorado Public Utilities Commission data privacy order[6] and of course the Commission's own existing privacy policy. The issue of privacy is challenging as it represents a delicate balance between product innovation (like smartphone applications) and customer privacy (like Facebook profiles). Privacy advocates will always argue for greater protection for consumers against fraud, open-ended access and potential misuse by malicious actors of all kinds in a market rich with "personally identifiable information" or PII. Entrepreneurs, technology companies and most importantly, utilities must implement technology in a complex web of regulation and legal statute in this area of law. In this area, we recommend the Commission and stakeholders review the "Privacy by Design"[7] framework as starting point for discussion on how to handle the issue of protecting consumer data without compromising innovation and the benefits of big data and analytics, which are crucial to realizing the REV goals and implementing the DSP construct. In short, Privacy by Design is a policy framework developed initially by Ann Cavoukian, Ph.D, the Information and Privacy Commissioner in Ontario, Canada. The PbD construct has been adopted by commercial entities such as TRUST-E, which verifies privacy policies for telecommunications and banking companies and was assigned the

[4] http://www.privacybydesign.ca/

[5] http://www.cpuc.ca.gov/NR/rdonlyres/79475EAC-B5F5-4E1A-ABAD-D260748B92D2/0/BigData.pdf

[6] https://www.dora.state.co.us/pls/efi/EFI.Show_Docket?p_session_id=&p_docket_id=10R-799E

[7] http://www.privacybydesign.ca/

compliance agent for the "Privacy Seal" concept as developed by TRUST-E and the Future of Privacy Forum.[8] It has also been adopted with modifications to IBM's internal policies and infrastructure development activity.[9] The 7 foundational principles of PbD are: 1) Proactive not reactive 2) Privacy as a default setting 3) Privacy embedded into design 4) Full functionality 5) End-to-End security 6) Visibility and transparency 7) Respect for user privacy. Let's be clear; IBM is not recommending that the Commission adopt PbD in full or as the default privacy framework. Rather, we believe the foundational concepts embedded in PbD are a good start for establishing the ground rules for data privacy in the development of the DSP. In particular, we note the principles of respect for user privacy and embedding privacy into the design of platform applications will be important to instilling confidence in the consumer markets and avoiding some of the issues encountered by past smart grid deployments such as the case of multiple smart metering deployments.

c) Focus on regulatory outcomes rather than inputs

Much of the tone, structure, and focus of the REV outcomes as outlined in the Staff matrix show inferences to the outcome based regulatory regime for electric and gas distribution utilities found in the United Kingdom's RIIO[10] (Revenue=Incentive+Innovation+Outcomes) framework. From an IBM E&U perspective, this represents a positive step in the right direction for energy regulation in the United States. While not necessarily suited for all global markets, we find that performance or outcomes based regulation at minimum provides an opportunity for a new set of badly needed network investments to demonstrate their value to customers or as OFGEM, the UK regulator puts it, to create "value for money". If the DSP is going to require capital investments for upgrading the network, then focusing on

[8] http://www.futureofprivacy.org/issues/smart-grid/smart-grid-consumer-privacy-seal-launch-press-release/

[9] http://privacybydesign.ca/content/uploads/2011/09/pbd-policy-practice-aug10.pdf

[10] https://www.ofgem.gov.uk/network-regulation-%E2%80%93-riio-model

outcomes such as those listed in the REV documentation will enable a longer term view for capital and business model planning. IBM E&U conducted a cursory review of multiple regulatory regimes that demonstrate aspects of performance based regulation. [11] Reviews of current and evolving energy regulation regimes in Canada, Turkey, and the United Kingdom were conducted to determine if there were structural commonalities. Common dimensions emerged from this review that may help the Commission promote a step-wise change in the DSP strategy for modernizing the power system while also creating a proper platform in a cost-effective and result-based manner. Around the world, outcomes based or "performance based" regulation is evolving into a more sophisticated, market based methodology. This maturation may help the industry redesign the grid to meet growing policy and customer requirements. When properly executed, this regulatory structure creates a clear planning horizon for utilities and aligns with the product development and risk profile of non-tradition plant investment. These investments are crucial to meet the changing policy and technology requirements being placed the energy system worldwide.

The common dimensions found in effective performance based regulation are as follows:

a) Realistic price control periods for capital investment cycles

b) Measurable performance outputs aligned with policy and

c) Strong financial incentive and penalty frameworks.

We envision a positive outcome for establishing a new regulatory framework that enables the DSP to develop cost-effective business plans that are driven by metrics that have a reward/penalty regime associated with the outcomes, rather than the associated inputs as is currently practiced. One, but

[11] "The Evolution of Performance Based Regulation", Matt Futch, IBM Global Policy Director

certainly not the only procedural pathway would be as follows; first, the Commission receives inputs on proposed REV outcomes, second, the Commission converts these outcomes into quantifiable metrics, and finally the Commission issues an order that establishes a RIIO like structure for a significant vetting period that may be litigated or held in a separate docket from Case 14M-0101. Whatever the final process may be, our general recommendation remains; to match the ambition of REV, we urge the Commission to consider moving beyond traditional cost-of-service regulation that contains specific regulatory constraints on technology investments (like used and useful, or historical test years) that do not exhibit the traditional poles and wires business of the past. One, but not the only model to consider is outcomes based regulation, which is better aligned with the goals of the REV.

TECHNOLOGY PREDICATES

a) Make cybersecurity a first tier requirement

IBM's perspective on cybersecurity in the electric power sector is based on an intimate level of business interaction with cyber threats to our global clients in day-to-day operations. In short, we help utilities monitor, detect, isolate, and resolve viruses, malware, and a multiplicity of internal and external threats to utility critical infrastructure. Gartner, a leading independent industry analyst group rates IBM as number one in the "magic quadrant" assessment of security information and event management.[12] Based on these real-life experiences in the field and working with our clients we offer the following recommendations. One, confronting the technical, cultural, and legal issues regarding the security of critical assets on the system should be done early in design, not as an afterthought or a "bolt on" to the P system architecture. Two, security should be seen as risk management and involve an agreed upon series of business and policy metrics that can be measured to demonstrate performance, rather than a set of guidelines that may be subject to misinterpretation. Third, our most important recommendation

[12] http://securityintelligence.com/gartner-2014-magic-quadrant-siem-security/#.U8WGZ53nbs0

for the Commission is to establish a set of common cyber-security metrics for the DSP to orient around during modification of existing system and the development of a new IT infrastructure that enables the core functions of the marketplace. When new or addition cyber security metrics are being considered, there are three characteristics IBM considers essential for the metrics to have maximum value. One, they must be easy to obtain with no expensive tools or overly labor-intensive processes need to acquire visibility into the network. Two, they must be easy to understand so a business person and the regulator can make the connection between what is being measured and what it indicates about the organization's risk management, reliability, safety or other performance objectives. Finally, the cybersecurity metrics must be easy to share, such that the information gathered not is so sensitive it cannot be shared among internal organizations and external regulatory authority. This information sharing component is particularly important which underlies the reasoning for much of the recent US Senate draft bill from Chairman Dianne Feinstein which incorporates liability protection, public-private sector information sharing and risk protection.[13] Finally, IBM believes that no other single action more simple and effective to ensuring the profile of security in a new DSP organization than the appointment and empowerment of a Chief Security Officer (CSO) responsible for enterprise-wide cyber security and compliance. The CSO must have ultimate control and responsibility for securing IT and OT across all lines of business, and as needed, into the extended supply chain. Regulators, governments, investors, employees and customers will notice and appreciate the strong signal a CSO appointment sends about how seriously the organization takes security and privacy.

b) Require an open-architecture model

Open-architecture and interoperability are "technology principle cousins" but they are not to be confused as being the same thing. While interoperability is a key principle to prevent siloed systems and

[13] http://www.feinstein.senate.gov/public/index.cfm/files/serve/?File_id=08de1c1b-446b-478c-84a8-0c3f35963216

expensive integration projects, the concept of an open-architecture model is focused on enabling all eco-system players that will want to integrate with the DSP to do so in a relatively fast, simple and easily understood manner. We recommend the open-architecture model for many reasons but the primary one is to prevent a series of closed systems developed by each DSP that prevents rapid, customer friendly and innovative products from reaching the market. To be fair, there are advantages of a "closed-system" approach, such as matching software and hardware, increased security in authentication, and a centralized chain of authority for all end-use applications and access to data. We find that an open architecture may be better suited for the DER and technology integration orientation of the DSP construct. We also "walk the walk" in our own internal business development arena. As an example, IBM is a founding member and advocate of the Open Stack cloud computing platform for public and private clouds. OpenStack is a cloud operating system that controls large pools of compute, storage, and networking resources throughout a datacenter, all managed through a dashboard that gives administrators control while empowering their users to provision resources through a web interface. Founded by Rackspace Hosting and NASA, OpenStack has grown to be a global software community of developers collaborating on a standard and massively scalable open source cloud operating system. [14] This indicates IBM's over-arching belief that new high-value applications for all businesses, including the energy sector, would benefit from the speed to market of products, the removal of proprietary capture from vendors, and the creation of a large ecosystem of developers for the entire industry to benefit from.

c) Make Interoperability a core design point

As demonstrated by the platform technology working group, there are both multiple standards and protocols for communications and alternative frameworks, such as NIST 2.0 and the IEEE 2030

[14] https://www.openstack.org/

architecture. The standards making bodies and technical communities, including IBM, that participate in this important process are all working hard to develop a coherent family of standards for the entire eco-system of intelligent devices and the network protocols necessary to interconnect them. The confusing, multi-party and non-uniform answers found in the standards discussion can and should give stakeholders pause as it portends a potential show-stopping discussion on the "right standard" or the "right architecture" for the DSP. We note this was a critical discussion held at the July 10th NYPSC meeting. The education of all stakeholders and the Commission on the importance of standards and the different options available to the utilities and technology community to develop the core building block functionalities of the DSP may be considered the single most important first action in this proceeding. We do not recommend the Commission attempt to resolve a complex technical problem for the standards community by imposing architecture on the DSP platform system. Instead, we recommend the Commission approve the open stakeholder process as recently approved by the board of the New York Smart Grid Consortium (NYSSGC), to develop the DSP business and technical architecture, standards and protocols necessary to achieve the Public Service Commission's REV goals. The ultimate objective of this effort would be to provide the best possible advice to the Commission, Commission Staff, the NYS utilities, technology vendors and other key stakeholders in these technical areas associate with DSP implementation. IBM as a member of the NYSSGC, strongly supports this Consortium led initiative. In addition, we urge the commission to avoid mandating a specific standard and subsequently "freezing out" technology options that could be cheaper, faster, or more reliable depending on how the system is designed. A better policy path is for the Commission to focus on the core concept of INTEROPERABILITY as a cornerstone of development and technology investment and let a wide spectrum organization such as the NYSSGC do the heavy lifting of providing a matrix of functionalities to existing standards. Definitions are important so for the record we offer the following definition of interoperability from the Smart Grid Interoperability Panel (SGIP);

"*The capability of two or more networks, systems, devices, applications, or components to exchange and readily use information—securely, effectively, and with little or no inconvenience to the user. The Smart Grid will be a system of interoperable systems. That is, different systems will be able to exchange meaningful, actionable information. The systems will share a common meaning of the exchanged information, and this information will elicit agreed-upon types of response. The reliability, fidelity, and security of information exchanges between and among Smart Grid systems must achieve requisite performance levels*" [15]

From our experience, smart grid projects and pilots can fall victim to a "cult of customization" that is a common problem for the ICT and software development industry. While developing a small system for reconciling errors in a billing database it may seem trivial to worry about whether this can communicate in a seamless way with 30 other incumbent systems. However, for the purposes of the DSP platform, any blindness to interoperability can prove financially onerous and create a near-fatal delay in delivering core functionality for both external ratepayers and the envisioned aggregating functions of the DSP. Second, a lack of focus on interoperability in system design will provide a functionality and niche-based culture to the development of DSP operations, subsequently increasing risk of going down specific technology paths that cannot easily be modified for integration into other critical systems. A quick example of this would be to have communications systems built without capability to transmit data from an on-site generation facility such as a solar array all the way to the Network Operations Center of the DSP. While this capability may or not be cost-prohibitive to implement right away, it will be important for operators and technology companies to be thinking about this level of interoperability

[15] http://www.sgip.org/Terms-Definitions

between systems early in the process rather than making these kinds of connections more costly in the future. By issuing a clear directive that interoperability will be the only acceptable route, the Commission will be sending a signal to the development community and jurisdictional utilities that closed, proprietary, and non-interoperable systems will not gain approval for future investment. This will save the Commission, and ultimately the stakeholders who want to see the REV vision successful time, money, and delays which prevent speedy delivery of customer and operational benefits.

DSP BUILDING BLOCKS

a) Make the consumer a core business driver for the DSP

The current vision of the Distribution System Platform as articulate by Staff sees an integrator of multiple technologies including but not limited to customer facing distributed energy, energy efficiency, storage and any number of new in-home products that may or may not be currently commercially available in the market. In a somewhat overused analogy, the DSP operates similar to the Apple IOS or Android operating system wherein the smartphone is the grid and the operating system enables both the DSP and customer to interact in a two way exchange of monetary value and services that benefit both the customer and the provider. In our view, this is an appropriate orientation for the business planning process as customer engagement will become a crucial component of whether or not the DSP construct can actually fulfill some of the policy goals outlined by the Commission. As a very short list of examples, there will need to be an attractive set of "applications" on the DSP operating system for; attracting customer participation in DR, participating in dynamic pricing packages, selling distributed energy back into the grid, charging electric vehicles at time that are advantageous to grid reliability, storing or discharging energy from distributed storage devices, etc. While there is a DER orientation to the concept of the DSP, there is no escape from the economics of scale and minimum participation thresholds necessary to make the business model work for both the DSP and multiple players

integrating into the system. In order to attract this level of participation and monetize the exchange of value from the network edge there will need to be a set of appealing applications that sit on top of the DSP "operating system" or OS. If the DSP construct is to work properly, there will need to be a strong adoption rate, a market demand for new products and services, and a desire amongst consumer and market entrants to engage in the marketplace in a meaningful way. The concept of putting the consumer first when considering design and function is a good place to start as evidenced by history of the smart phone industry and the multiple operating systems it has produced in the marketplace.

b) Focus on developing DSP functions, not technologies

As a rule, we recommend the Commission spend more intellectual capital on articulating the core functionalities of the DSP in the marketplace in a time based and "building block" manner for investments. This is contrast to specifying technologies, platforms, standards or any other specific technology path in the data analytics, advanced distribution management, asset management, smart meter, or other technologies present or to be developed in the energy supply chain. The reason for this is simple; specifying a technology or set of technologies will reduce competition, promote a closed system, increase costs, and the risk of stranded assets if the specified technology does not live up to its projected performance metrics. We note that the temptation to specify technologies will remain powerful. It is easier to grasp onto the concrete and understood functions of say, a specific smart metering or communications technology, rather than list minimum functions and trust the market to meet those requirements. On the other hand, there needs to be a clear set of minimum functions outlined in the REV and ideally, a "building block" approach wherein the first phase of investments must meet specific operational requirements of the DSP, like advanced distribution management systems then an outline of the next building blocks to follow to provide certainty to the market. As a quick example of how this can play out in practical sense we will provide the example of advance metering infrastructure, which is considered an area of contention in this proceeding. If the Commission were to

take a technology specific approach, there may be a decision to either mandate fully functioning smart meters with two-way communications or a decision to ban deployment of AMI until more cost-benefit analysis is conducted. In the functionality focused approach, the Commission would come to consensus about what the primary functions of the DSP are needed in the sensing, monitoring, data collection, and pricing arena and the stakeholders would then weigh in on what technologies would be required to meet those functionalities, at what cost, and the timing associated to deliver these functionalities in the timeline specified by the Commission. A final comment here is that this approach may not satisfy all parties as there will be advocates and opponents of almost every technology pathway that could be taken to meet the core goals of the REV and the DSP in particular. This is the point, an approach that focuses on functionalities required and when they are required in the marketplace will help train the eco-system towards meeting these functions rather than battling for market share in a perceived "scarcity" dynamic imposed by the selection of a specific technology.

c) Develop the DSP vision first, then apply cost-benefit analysis

Through IBM E&U's global energy practice we have developed a large data set on how utilities, governments, and regulators have either succeeded or failed to fully realize the potential of their original policy and technology goals. In particular, we note the relative deliberate nature of Japan's market restructuring plan and how the utilities are developing plans to re-configure the grid for renewables and a fully competitive retail market. This stands in contrast to the severe challenges of the EU's Carbon Trading Scheme (ETS) which was designed to create a price on carbon and subsequently support the overarching goals of the European Union's third energy package, otherwise known as the "20/20/20" goals. Generally speaking, there was a more holistic and defined sense of what the policy making community wanted the energy market to look like and what energy policy goals would be achieved in the restructuring of Japan post-Fukashima. Unfortunately, the econometric focus of

Europe's ETS scheme was put "on paper" well before there was consensus on an EU-wide energy vision. This has arguably led to unstable dynamic, with low carbon prices and separate member state policies preventing an integrated and fully functioning EU-wide carbon market. In the United States, there has been criticism from industry observers that the focus of early government investment was too heavily concentrated on one technology area (smart meters) and not on a holistic vision of the energy system. Whether this observation is fair or not is less relevant to our recommendation than the concept that a strong vision is needed for where policymakers and regulators want to move the energy system before diving directly into a detailed cost-benefit analysis. If we look at the evolution of renewable energy portfolio standards in the US states, you can see that there was a clear policy mandate with potentially less focus on the financial impact until the policies were promulgated at the Public Utilities Commissions where the regulatory charter of consumer protection and cost-benefit analysis for investments were generally allowed to work its way through a tradition litigation pathway. In many states, the post-implementation analysis has shown that rates have NOT increased at the level and rate as originally feared and some of this can be credited to the leeway that legislatures gave to the PUC's to work with the energy providers and stakeholders in developing retail rate caps, staggered capacity programs, tiered subsidy programs etc. To summarize, our experiences in the US market and abroad indicates the importance for regulators and the stakeholder community to have a common understanding of what the energy vision is before engaging into a highly technical econometric analysis. This allows room for creativity, innovative ideas, and a more predictable business investment climate that all stakeholders can subsequently debate on the relative costs and benefits of pursuing. Without the Commission setting clear guideposts, the entire eco-system supporting the REV process will get stuck in a circular and narrow financial argument on technologies, price curves, and societal benefits.

TRACK 1 POLICY QUESTIONS

We now answer select policy questions and offer actions responding to the Track 1 policy document.

Are the outcomes the appropriate results the Commission should be striving for in this effort?

As it stands, the current categories cover a good spectrum of the key functions the Staff envisions as justifying investment and implementation of the DSP. However, we note that there are some important additions that could be made to help bolster Category V and Category VI. Under the innovation category we recommend a new subject: "Enable Continuous Research and Development". There remains a persistent research and development gap for utilities to either directly invest or partner with the private industry to develop new applications for DER, customer products, and other network edge technologies. This has a deleterious effect on the timing, interoperability, and cost of deployment for consumer facing products that quickly integrate into utility systems. We recommend adding this "RD&D" element to the innovation category as the DSP will need to be operating in a continuous innovation business cycle, rather than the fixed investment operating system of the past. Also, we would recommend that the Staff add "Customer Privacy" to Category VI: Customer Satisfaction. We note that in many experiences deploying smart grid projects with any sensing technology (smart meters, communications, HANS, etc.) there is the issue of how to balance the right to privacy in existing statute versus an innovative and open market which typically requires a relatively granular customer data set. We recommend including privacy as a key subject area under customer satisfaction. While DSP consumers may not ask for privacy as a specified component, a lack of early design for consumer protections in this area will derail or delay many critical product launches that would help make the DSP marketplace successful in early phases of deployment.

Discuss the preferred analytical framework to assessing benefits and cost

In our experience, there is no established cost-benefit methodology which perfectly incorporates all policy, environmental, reliability, stranded cost and consumer protection metrics. These metrics and likely many more constitute drivers for network and technology investment. From our perspective, there are several issues which need clarification or at minimum base lined within any cost-benefit analysis framework. A partial list of key elements requiring rigorous analytical focus are a) a defensible pricing methodology for valuing ancillary services, energy and capacity and other concomitant features of DER b) a proper economic model for monetizing the reliability and environmental attributes of DER and any other generation resource c) energy storage valuation in the wholesale and retail markets d) defensible price curves on all relevant and near-future technologies that would advance the capability pathway for a DSP. It's important to begin answering these questions in order for providers to incorporate a Commission approved methodology as a baseline for their own business plans. IBM has performed cost-benefit analysis in the smart grid arena in many global markets and clearly there are many well-qualified firms in this arena. Rather than recommending any company or methodology our recommendation we urge the Commission to consider two separate actions. First, encourage a non-vendor, non-utility party to conduct its own analysis by hiring a respected third party and filing the resulting study. Second, the Commission may want to consider issuing a request for proposal (RFP) based on its own internal decisions on key metrics following the full results of the proceeding. We note that this is what the UK's energy regulator, OFGEM, did for the Gas SCR cost-benefit analysis on Demand Response[16] within the RIIO regulatory regime. Considering that many of the metrics in PSC Staff "REV outcomes matrix provided have similar parameters, OFGEM's action may be a good model to follow.

[16] https://www.ofgem.gov.uk/ofgem-publications/85990/poyrygasscrdsrcbafinalreportv20.pdf

CONCLUSION

In conclusion, we would like to commend the Commission on managing a highly transparent, inclusive, and deliberate process to constructing a new energy vision for the New York that enables a cleaner, more reliable, and policy aligned energy system. Considering the rate of technology adoption, it is no small task to develop a new regulatory framework that enables a new marketplace rather than burdening it with narrow, technology specific rule makings. We find the concept of a "Distribution System Platform" as currently envisioned in Staff's initial proposal as the right direction for enabling customer choice, maintaining reliability, and establishing an energy "goods and services" market place that reflects the State of New York's focus on renewable energy, energy efficiency, and utility innovation.