

# Appendix A

## Market Design & Platform Technology Group (MDPT)

### Work Plan & Scope of Work

#### 1. Introduction

As directed by the February 26, 2015 Order Adopting Regulatory Policy Framework and Implementation Plan (Order) in the Reforming the Energy Vision (REV) proceeding, issued by the New York Public Service Commission (PSC), this document contains the work plan and scope of work of the Market Design & Platform Technology (MDPT) working groups.

As background, on January 8, 2015, Administrative Law Judge Julia Bielawski ruled that:

“In May 2014, working groups were convened to address Track One issues in this proceeding. Those groups filed reports on July 8, 2014 and presented their findings to the Commission at a July 10, 2014 technical conference. As recognized in the working group reports and in Staff’s August 22, 2014 straw proposal, however, some of the critical issues that parties addressed in the working groups require further stakeholder input. Specifically, continued work is needed in the areas of market design and platform technology to consider and develop Distributed System Platform (DSP) rules and operational procedures.

Accordingly, staff should immediately select, convene and coordinate, with Rocky Mountain Institute and the New York State Smart Grid Consortium, two closely-related groups addressing market design and platform technology. The groups will include in their membership representatives from different sectors of the electric market and industry, to be selected by Staff, and will engage market and technical experts to assist the work. The end product of these groups should include recommendations on market rules and technical standards. To facilitate the focus needed to accommodate an aggressive work schedule, the groups will be very small in size, but should periodically provide updates of their work to all parties.”

Accordingly, the New York Department of Public Service (DPS), Rocky Mountain Institute (RMI), and the New York State Smart Grid Consortium (NYSSGC), collectively, the MDPT “core team,” began the Market Design & Platform Technology (MDPT) Group with a kickoff meeting in New York City on January 29, 2015.

On February 26, 2015, the New York PSC issued the Order, stating that:

“The MDPT group will file a detailed work plan by March 26, 2015, and will issue its first report or reports by July 1, 2015. To provide for party input on preliminary findings and/or recommendations, the MDPT group must engage in an outreach effort to interested stakeholders including representatives of low income customers.”

The core team files this memorandum and MDPT Scope of Work (Scope) in fulfillment of the Order requirement.

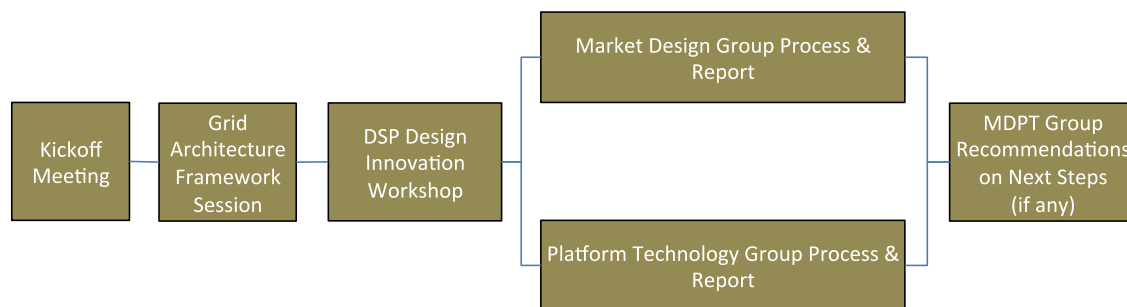
*Purpose*

The primary purpose of the MDPT group is to provide guidance for investor-owned utility Distributed System Implementation Plans (DSIPs) on near- and mid-term market design and platform technology issues, and any other recommendations to the Commission for actions needed to facilitate near- and mid-term implementation of the Distributed System Platform (DSP) market. The guidance and outcomes will be in line with the principles and guidance put forward in the Public Service Commission’s Track 1 Order as part of the Reforming the Energy Vision (REV) proceeding.

*Process*

The MDPT group is composed of two working groups—one focused on market design and one focused on platform technology issues. These groups will sometimes work together, sometimes in parallel, and will be closely coordinated so that key insights from one group effectively inform the other.

The graphic below is a high-level depiction of the major MDPT group milestones. Note that this process represents what is likely to be a first phase of work to develop the DSP market. The group will make recommendations at the end of this first phase regarding steps to be taken in subsequent phases.



**2. Scope Summary Table**

<b>Milestone</b>	A. Grid Architecture Workshop	B. DSP Design Innovation Workshop	C. Market Design Process & Report	D. Technology Platform Process & Report
<b>Timeline</b>	February 24	March 9-10	June TBD	June TBD
<b>Objective</b>	Introduce grid architecture construct, and consider application to NY and as a framework for group	Rapidly prototype conceptual long-term DSP market models to set the context for more detailed near- and mid-term market design and platform technology issues to	Provide guidance for utility Distributed System Implementation Plans (DSIPs) related to near- and mid-term DSP market implementation, as well as any other recommendations that	Provide guidance for utility Distributed System Implementation Plans (DSIPs) related to near- and mid-term platform technology needs to support DSP

	considerations.  <i>Both groups participate.</i>	be resolved by the group.  <i>Both groups participate.</i>	require Commission action.	implementation, as well as any other recommendations that require Commission action.
<b>Key Topics</b>	<ul style="list-style-type: none"> <li>• Grid architecture framework</li> <li>• Preliminary discussion of market actors, roles, interactions, and needed standards</li> </ul>	<ul style="list-style-type: none"> <li>• Long-term DSP market models</li> <li>• High-level transition pathways</li> <li>• Commonalities and differences across possible pathways to set near-term priorities</li> </ul>	<ul style="list-style-type: none"> <li>• Market actors and interactions</li> <li>• DSP functional requirements &amp; capabilities</li> <li>• Near-term products and transactional mechanisms</li> <li>• Use cases</li> <li>• Near-term data needs and transparency</li> <li>• Typology of market rules</li> <li>• High level assessment of alternative market structures</li> </ul>	<ul style="list-style-type: none"> <li>• Technology requirements to support market</li> <li>• Technology deployment strategy</li> <li>• Technical capability requirements of market participants</li> <li>• Standards for key DSP market interfaces.</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>• Preliminary grid architecture approach for NY</li> </ul>	<ul style="list-style-type: none"> <li>• Summary of one or more possible long-term DSP market models and implications for near-term</li> </ul>	<ul style="list-style-type: none"> <li>• Report to be presented to the Commission in a technical conference</li> </ul>	<ul style="list-style-type: none"> <li>• Report to be presented to the Commission in a technical conference</li> </ul>

### **3. Details of MDPT Group Process & Schedule**

#### *A. Grid Architecture Workshop*

##### Purpose & Objectives:

Grid architecture is the specialization of system architecture for electric power grids. Grid architecture principles can be used to clarify the overall system structure, attributes, and interactions. Recent work undertaken by the Department of Energy (DOE) seeks to “explain and illustrate the principles of the system architecture, and apply those principles to model potential futures of the electricity system.” The synthesis, *Grid Architecture, Release 2.5* (January 2015) investigates structural constraints to grid modernization, provides selected potential future views of portions of grid architecture, and helps identify issues that may have public policy implications.

In the MDPT Grid Architecture Workshop, the working groups began to explore the concept of grid architecture and consider how to apply it to New York and to REV as a framework to guide the group’s work. The specific objectives of the Grid Architecture Workshop were:

- Starting with the overview of Department of Energy’s survey of approaches and recommendations, apply grid architecture concepts in the NY REV context,
- Identify and discuss:

- Near-term and mid-term DSP market participants and their roles and responsibilities
- Near-term and mid-term market participant interactions necessary for functional markets
- DSP minimum functions in the near and mid-term
- Core standards that might govern the architecture and interaction standards, and work done to date in other jurisdictions
- Set the foundation for later discussions during the Innovation Workshop.

Format:

The Grid Architecture Workshop was a one-day workshop, with combined participation from the Market Design and Platform Technology working groups. It included presentations from DOE and other experts in the field of grid architecture, facilitated discussions with the whole group to consider adaptations and implications for New York, and breakout sessions to identify specific changes or questions.

Outputs:

- Clear articulation of how the concept of grid architecture can be used in the work of the MDPT group
- Preliminary grid architecture approach for New York
- List of key questions that must be considered as the grid architecture is further developed

### *B. DSP Design Innovation Workshop*

Purpose & Objectives:

While the focus of the Market Design & Technology Platform Process was on the near-term, and to some extent the mid-term, it is important to put that in the context of the end-state vision to ensure that activities build towards that end-state rather than impede it. Further, the DSP market as envisioned in REV is a first of its kind, and so it is important to think broadly and creatively about that market prior to conducting the deep and detailed work. The objectives of the innovation workshop were to:

- Build collaborative relationships among working group participants
- Clarify and align on potential end-state vision(s)
- Identify key near-term market design considerations relevant to that end-state vision(s)

Format:

The innovation workshop was a two-day intensive working session, with combined participation by the Market Design and Platform Technology working groups, along with invited advisors. Prior to the Innovation Workshop, group participants were asked to articulate their individual end-state vision in detailed interviews. This input was synthesized by the core team and advisors, and presented to the group at the start of the Innovation Workshop. At the Innovation Workshop, we conducted the following activities:

- **Rapid cycle prototype conceptual models**—Several preliminary conceptual models were discussed at the start of the innovation workshop based on end-state vision views of participants. At the workshop, these models were compared and contrasted to allow the group to more clearly describe viable end-state models that reasonably represent the spectrum of options.
- **Build out high-level transition pathways for each conceptual end-state model**—Once end-state options are identified, high-level transition paths were developed that explained how the DSP market might mature from today to the near-term to the mid-term to the long-term. These transition paths were intended to provide a logical and orderly view of how the DSP market could evolve.
- **Identify commonalities across conceptual models and key differences that together impact near-term and mid-term actions**—By considering different ways the DSP market may evolve, it became possible to identify common near-term features that could potentially be put in place while preserving optionality for future market evolution.

Outputs:

- Preliminary description of conceptual models, comparison of commonalities and differences across models, relevant market interaction diagrams, and other factors to be developed

### *C. Market Design Process & Report*

Purpose & Objectives:

As detailed in the February 26, 2015 Order, the purpose of the Market Design group is to identify the necessary functional and business architecture for the DSP and DSP markets. The group will provide guidance for utility Distributed System Implementation Plans (DSIPs) related to near- and mid-term DSP market implementation, as well as any other recommendations that require Commission action.

Broadly, the Market Design group will seek to answer:

- What defines the DSP market, how might it evolve from near-term to mid-term to long-term, and what time periods define these market phases?
- With a focus on the near-term but in the context of the overall transition, what functionalities and capabilities must the DSP market and market actors provide to achieve REV's goals?

- How will different actors interact with the DSP market and what are their roles and responsibilities related to the following functions:
  - Customer engagement
  - Product and service development
  - Product and service delivery performance
  - Customer and system information provision (e.g., data availability and transparency and information system compatibility and security),
  - Settlement and related fiscal requirements associated with market transactions (e.g., product and service payments, including charges, incentives, and non-performance penalties),
  - Consumer protections
- What elements of market design must be standardized across the six utility-operated DSP markets, and what rules are needed to adequately govern the markets?
- What are the implications regarding the functions and capabilities required to operate, manage, and oversee future retail and wholesale markets?
- Are there additional near term actions that can be taken to set the stage for REV and to enable efficient and widespread deployment of DERs, to include:
  - DER permitting
  - Building Code modifications, etc.)

Topic Details:

**Task 1: Identify Market Actors & Interactions**

<b>Foundational information/resources<sup>1</sup></b>	<ul style="list-style-type: none"> <li>• The DSP Markets Committee <a href="#">Report</a> considered an initial market structure for interactions between the DSP, third parties, and customers</li> </ul>
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<sup>1</sup>Foundational information / resources contain references to information contained in previous stakeholder reports and guidance from the NY PSC and DPS as issued as part of the REV proceeding that is relevant to each MDPT task. As background, in late spring of 2014, DPS staff formed two working groups, sub-divided into four committees, to develop guidance related to market and technical issues in the context of the Reforming the Energy Vision (REV) proceeding. The four committees were:

- Distributed System Platform (DSP) Markets Committee
- Customer Engagement Committee
- Platform Technology Committee
- Microgrids & Community Grids Committee

At the direction of Staff, the working groups filed reports on July 8, 2014 and presented their results at a July 10, 2014 Public Service Commission (PSC) technical conference. Importantly, committee reports represent both consensus and non-consensus views that were explored through the working group process. In August 2014, DPS staff issued a Straw Proposal on Track One Issues (the Straw Proposal) informed by the working group process and additional party comments filed on July 18, 2014, as well as by further research and discussions conducted by staff. The Straw Proposal provides additional content and discussion building on the working group reports, proposes the general outlines and structure for the DSP market, and suggests additional processes to address unresolved issues. Parties filed Straw Proposal comments in September 2014 and reply comments in October 2014. The PSC issued the Order on February 26, 2015, establishing regulatory direction on matters within the scope of this proceeding.

	<ul style="list-style-type: none"> <li>• The DSP Markets Committee identified the relationship of future distribution markets with wholesale markets</li> <li>• The Customer Engagement Committee <a href="#">Report</a> identified potential ways for the DSP to effectively interact with the customer, along with best practices from current utility and ESCO programs, and barriers to customer engagement</li> <li>• The Straw Proposal identified potential market actors and offered initial thoughts on the roles of each, to include: <ul style="list-style-type: none"> <li>○ Customers</li> <li>○ The DSP</li> <li>○ The Utility</li> <li>○ The NYISO</li> <li>○ DER providers, including ESCOs</li> </ul> </li> <li>• The Order further developed the roles and relationships of DSP market actors, including the wholesale market <ul style="list-style-type: none"> <li>○ The utility role with respect to provision of DER products is addressed, and further described below</li> </ul> </li> <li>• The Order directed additional deliberation of actor roles and responsibilities to the MDPT process</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>• Identification of key actors (e.g., DSP, Utilities, DER providers, participating and non-participating customers, ESCOs with DERs, ESCOs without DERs, NYISO)</li> <li>• Definition of key actors' roles.</li> <li>• Map of how key actors interact, with associated descriptions, including: <ul style="list-style-type: none"> <li>○ Energy flows</li> <li>○ Financial flows</li> <li>○ Information flows</li> </ul> </li> <li>• Prioritized interfaces in the near-term and mid term</li> </ul>
<b>Level of detail</b>	<ul style="list-style-type: none"> <li>• Describe general roles for broad types of actors; visually depict flows and interfaces</li> </ul>
<b>Needed resources</b>	<ul style="list-style-type: none"> <li>• Grid architecture expertise and capability to structure a grid architecture development process</li> <li>• Wholesale and retail markets expertise</li> </ul>

**Task 2: Identify DSP Functional Requirements & Capabilities**

<b>Foundational information/resources</b>	<ul style="list-style-type: none"> <li>• The Platform Technology Committee <a href="#">report</a> made a preliminary inventory of market functional requirements for the grid, customer/DER/microgrid, and market</li> <li>• The Platform Technology Committee report identified platform functionalities, separating requirements into market operations, grid operations, and integrated system planning</li> <li>• The Straw Proposal provided a preliminary inventory of functions of existing distribution systems in New York</li> <li>• In the Straw Proposal, Staff proposed five priority functional requirements: <ul style="list-style-type: none"> <li>○ Real-time load monitoring;</li> <li>○ Real-time network monitoring;</li> <li>○ Enhanced fault detection/location;</li> </ul> </li> </ul>
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	<ul style="list-style-type: none"> <li>○ Automated feeder and line switching (FLISR/FDIR); and</li> <li>○ Automated voltage and VAR control.</li> <li>● Party comments on the Straw Proposal addressed Staff's prioritization, making some additions and modifications. For example: <ul style="list-style-type: none"> <li>○ NEMA suggested that AMI is a foundational element of achieving a modern grid. Advanced metering functionality (AMF) will be integral to realizing grid modernization objectives.</li> <li>○ The Joint Utilities suggest that advanced means of data access should be established as part of the DSP functional requirements, but did not agree that utility supervisory control and real-time data should be provided to third-party providers out of concern for cyber security, critical infrastructure, public safety, and reliability. The topic of control should be further explored, as well as mechanisms that will protect security and reliability while providing information needed to enable competitive markets.</li> </ul> </li> <li>● The Order generally endorsed the list of functionalities developed by the Working Group (contained in the Platform Technology Committee report), without predetermining any particular result</li> <li>● The Order discussed the DSP market's operations, structure, and products, detailing DSP functional requirements and capabilities. <ul style="list-style-type: none"> <li>○ The Order noted that additional work is underway to clarify required functionalities and a development approach that supports timely and uniform market development</li> </ul> </li> <li>● In evaluating Advanced Metering Functionality, which is related to broader functionalities of the DSP, the Order noted desired functionalities will differ with market sectors; for that reason the Order deferred to articulate a single list of desired functionalities, but noted Staff will incorporate functionality guidance developed by the MDPT process in its August 3 guidance for development of utility DSIPs</li> <li>● The Order noted demonstration projects will be helpful to tailor a set of protocols (related to a wide range of functionalities)</li> <li>● The Order outlined near-term, transitional, and long-term DSP functional requirements for market animation. Requirements include: <ul style="list-style-type: none"> <li>○ Near-term: <ul style="list-style-type: none"> <li>▪ Ability to meet and balance system reliability, customer empowerment, emission reduction, etc.</li> <li>▪ Integration of DER into the current electricity delivery system</li> </ul> </li> <li>○ Transitional and longer term: <ul style="list-style-type: none"> <li>▪ DSPs will increasingly rely on DER to maintain reliable system operations during both "blue sky" days and significant system events.</li> </ul> </li> </ul> </li> </ul>
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	<ul style="list-style-type: none"> <li>▪ DSP operational functions also include real-time load monitoring, real-time network monitoring, enhanced fault detection/location, automated feeder and line switching, and automated voltage and VAR control.</li> <li>▪ Commit and dispatch market-based DER and integrate net load information.</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>• Identification of DSP functions and capabilities needed to animate markets, including: <ul style="list-style-type: none"> <li>○ Needs from DER providers</li> <li>○ Needs to best engage customers and to encourage investment in DER</li> <li>○ Assessment of existing and anticipated capabilities by utilities to carry out functions and responsibilities</li> <li>○ Assessment of any updates to NYISO capabilities</li> <li>○ Assessment of capabilities needed for market operations (billing, performance assessments, measurement, and verification, performance payments/penalties, dispatch capabilities, stakeholder training, customer service organizations)</li> </ul> </li> <li>• Prioritized list of DSP functions and capabilities needed in the near- and mid-term based on identified future models</li> <li>• Specification of which functions and capabilities should be uniform across DSPs</li> <li>• Identification of possible cost and resource implications</li> <li>• Identify, if possible, preferred time phasing of investments based on expected value</li> <li>• Consider development of metrics to track DER amenability and penetration within DSP territories</li> </ul>
<b>Level of detail</b>	<ul style="list-style-type: none"> <li>• Specific list of functions with clear descriptions and implications</li> <li>• Initial assessment of possible cost implications although not a complete benefit-cost analysis, which will be developed in a parallel process</li> </ul>
<b>Needed resources</b>	<ul style="list-style-type: none"> <li>• Research on leading edge industry thinking around functions and capabilities <ul style="list-style-type: none"> <li>○ Landscape of industry thinking</li> <li>○ Transactive energy</li> </ul> </li> <li>• Feedback from advisors</li> </ul>

**Task 3: Identify Near-Term Products & Transactional Mechanisms**

<b>Foundational information/resources</b>	<ul style="list-style-type: none"> <li>• The DSP Markets Committee Report identified preliminary protection products that may be purchased by the DSP: <ul style="list-style-type: none"> <li>○ Base load modification</li> <li>○ Peak load modification</li> <li>○ Grid services</li> <li>○ Contingency and planning</li> </ul> </li> <li>• The DSP Markets Committee Report identified potential products that may be purchased by customers, DER owners, ESCOs and other third parties: <ul style="list-style-type: none"> <li>○ Delivery services</li> <li>○ Pricing and billing services</li> </ul> </li> </ul>
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	<ul style="list-style-type: none"> <li>○ Metering information services</li> <li>○ DER services</li> <li>○ Interconnection services</li> <li>○ Data sharing and DER maintenance, operation, and financing</li> <li>● The Staff Straw Proposal identified possible procurement options including regulated tariffs, automated real-time and day-ahead markets, and RFPs</li> <li>● The Staff Straw Proposal identified a set of principles to guide market design. These principles relate to market transparency and conditions to facilitate successful transactional mechanisms.</li> <li>● The Straw Proposal addressed concerns related to utility participation in DER markets</li> <li>● Party comments regarding the Staff Straw Proposal generally supported market principles, but noted additional specific products and services.</li> <li>● Notably, the Smart Grid Consortium Proposal to Facilitate Working Group effort identified a preliminary list, and process to identify near-term products and services, filed September 22, 2014. Revised proposal filed October 22, 2014.</li> <li>● The Order provided illustrative, non-exhaustive examples of near-term products that market actors will provide and procure, with demand management being a focal point</li> <li>● The Order noted the role of technology innovators and third party aggregators is to develop products and services that will enable full customer engagement, while the utilities' role is to be responsible for reliability and functions to enable distributed markets</li> <li>● With respect to utility participation in DER product and service markets, the Order limits utility ownership of DER under certain specified circumstances</li> <li>● The Order established that product and service provision rules should be developed subject to the market design guidelines, referenced below in market design Task 6</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>● Assessment of the following topics, including path/phasing, pros/cons, and implications: <ul style="list-style-type: none"> <li>○ Possible products transacted with and services provided by DSPs (e.g., day-ahead load flexibility product)</li> <li>○ Mechanisms to achieve price transparency for both market settlements and investment price signals</li> <li>○ The merits of different transactional mechanisms</li> </ul> </li> <li>● Recommendations for appropriate near-term and mid-term products, services, and transactional mechanisms, including systems, tools and capability requirements to deliver those</li> <li>● Assessment of near term and mid term operational mechanisms needed to establish a market</li> <li>● Specification of which products, services, and mechanisms need to be uniform across DSPs</li> </ul>

	<ul style="list-style-type: none"> <li>• Identification of near-term use cases that will be developed in Task 4</li> <li>• Workplan / proposed next steps for considering more sophisticated mid and longer-term models (e.g. transactional energy)</li> </ul>
<b>Level of detail</b>	<ul style="list-style-type: none"> <li>• General descriptions of recommended products, services, and mechanisms but not detailed design</li> </ul>
<b>Needed resources</b>	<ul style="list-style-type: none"> <li>• Ideas for products, services, and mechanisms from experts outside the group (e.g., AEE)</li> <li>• Expert input on workplan for considering mid- and longer-term</li> <li>• Research and summary of innovative examples and national best practices (e.g., BQDM, etc)</li> </ul>

**Task 4: Specify Use Cases, with emphasis on near term use cases**

<b>Foundational information/resources</b>	<ul style="list-style-type: none"> <li>• The Platform Technology Committee report identified several key challenges with the current infrastructure and technology needed to enable DSP development</li> <li>• The Platform Technology Committee report included early use cases and architecture design.</li> <li>• The Straw Proposal did not specify use cases that must be developed per se, but did note that: <ul style="list-style-type: none"> <li>1) policy development should encourage investment that can meet future demands and products and services, 2) microgrids represent a special case for standard development, and 3) the evolving technology landscape will require modification to utility interconnection and operation (factors included in use cases) going forward. <ul style="list-style-type: none"> <li>○ Party comments regarding the straw proposal addressed use cases. For example: Silver Spring argued strong networks are needed to support today’s use cases, and are extensible for tomorrow’s use cases</li> </ul> </li> </ul> </li> <li>• The Order, while not specifying use cases, noted that use cases will illustrate how specific products or services would interact with the DSP</li> <li>• The Order discussed market interactions to be contained in use cases among actors and the platform</li> <li>• The Order noted use cases will require further deliberation, and will serve to facilitate parties’ review and comment in a transparent manner</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>• Clearly defined use cases and how they should be used</li> <li>• Use cases should <ul style="list-style-type: none"> <li>○ Clearly state purpose and definition</li> <li>○ Be simple, easy to understand, and utilize a standard template</li> <li>○ Drive understanding of prioritization for technologies, help identify what data is/needs to be available and help identify/prioritize interfaces/standards</li> </ul> </li> <li>• 3-6 use cases focused on near-term priorities (e.g. energy storage for X purpose) given future models</li> </ul>

	<ul style="list-style-type: none"> <li>○ Market design components</li> <li>○ Platform technology components</li> <li>● Proposed ongoing process for developing and maintaining use cases</li> </ul>
<b>Level of detail</b>	<ul style="list-style-type: none"> <li>● Use cases provide instructions to market participants related to pre and post conditions necessary to provision a specified DSP market product or service with a particular technology or set of technologies</li> <li>● A simplified use case template</li> <li>● Populated use case template for 3-6 use cases focused on near-term priorities</li> </ul>
<b>Needed resources</b>	<ul style="list-style-type: none"> <li>● Inventory of existing use cases relevant to DSP products and implications (e.g., from SGIP)</li> </ul>

**Task 5: Specify Near-Term Data Needs & Transparency Requirements**

<b>Foundational information/resources</b>	<ul style="list-style-type: none"> <li>● The Platform Technology Committee report identified access to data and system data sharing as one of several challenges with current infrastructure and technology.</li> <li>● The Market Committee report notes the absence of information regarding distribution system needs, DER performance data, and customer account information and data.</li> <li>● The Customer Engagement Committee report observed that improved data access will make it simpler for customers to engage with third parties offering value-added services. It further noted the absence of sufficient data is due to New York’s lack of installed AMI, and is a barrier to entry for third party developers.</li> <li>● Utilities argued that this needs to be balanced with the cost to provide the information, that full scale deployment may not be required, and that a strategic deployment (area/time based) may be preferable.</li> <li>● The Straw Proposal affirmed the lack of data availability to market participants as a key barrier to DSP market development. Staff sought party comment on specific data needs, and established processes to address market structure barriers to obtaining customer data, as well as to establish a data warehouse with system and customer data. The Straw Proposal referenced utility efforts to build a web tool to enable customers’ access to data and to DER provider products.</li> <li>● Parties provided comments on the Straw Proposal related to data needs. <ul style="list-style-type: none"> <li>○ Utilities argued that deployment of devices to collect needed data should to be balanced with the cost to provide the information, that full-scale deployment may not be required, and that a strategic deployment (area/time based) may be preferable.</li> <li>○ Parties disagreed as to ownership of a data exchange.</li> <li>○ Party comments suggested data is interrelated to technology needs. Parties identified granular data needed to coordinate</li> </ul> </li> </ul>
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	<p>and enable greater penetration of DERs. Parties listed the cyber security requirements applicable to date.</p> <ul style="list-style-type: none"> <li>• The Order provided that DSP regulation will ensure fair and transparent information along with data and services to all providers and their customers</li> <li>• The Order addressed phasing of the utility efforts to provide DER data to customers via website tools under development</li> <li>• The Order adopted guidelines establishing that the market will be transparent, providing timely and consistent access to relevant information by market actors, as well as public visibility into market design and performance</li> <li>• The Order established that a particular focus of data needs and transparency requirements is needed for improved price transparency</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>• Types of customer data needed and appropriate level of granularity for each; the data requirements should be prioritized</li> <li>• Types of system data needed and appropriate level of granularity for each; the data requirements should be prioritized</li> <li>• Qualitative implications for privacy, security, equity and potential identifications of rules and laws that would require change to meet the proposed requirements</li> <li>• Information provided as an input to the Platform Technology group <ul style="list-style-type: none"> <li>○ Identification of any modeling needs to support DSP market planning and operations</li> <li>○ Any implications for infrastructure needs (e.g., AMI, Distributed Automation))</li> <li>○ Strategic guidance on AMI deployment and Distributed Automation principles</li> </ul> </li> <li>• Identification of any synergies with other business areas (e.g., system ops, communications capabilities)</li> </ul>
<b>Level of detail</b>	<ul style="list-style-type: none"> <li>• Specific types of data with level of granularity and frequency, as well as recommendations on consistent formats, but not details of data sharing mechanisms, etc.</li> </ul>
<b>Needed resources</b>	<ul style="list-style-type: none"> <li>• Assessment of national best practices and approaches to data access and transparency</li> </ul>

**Task 6: Clarify Typology of Market Rules, with emphasis on near term**

<p><b>Foundational information/resources</b></p>	<ul style="list-style-type: none"> <li>• A subgroup of the Markets Committee investigated the relationship of future distribution markets with wholesale markets.</li> <li>• The Market Committee report noted that market rules need alignment with ISO to allow participation by DERs and the wholesale level.</li> <li>• The Straw Proposal endorsed the need for market rules to provide clarity to market actors</li> <li>• Party comments on the Straw Proposal additionally noted that market rules should address the need for parity between benefits to the DSP and to the bulk power system, regardless of third party or utility ownership.</li> <li>• The Order adopted guidelines governing DSP market design, which includes guidelines related to functions the DSP must provide. These guidelines pertain to multiple tasks, and are relevant to development of market rules. Guidelines include: <ul style="list-style-type: none"> <li>○ Transparency</li> <li>○ Uniformity</li> <li>○ Customer protection</li> <li>○ Customer benefit</li> <li>○ Minimize market power</li> <li>○ Reliable service</li> <li>○ Resilient system</li> <li>○ Fair and open competition</li> <li>○ Flexibility, diversity of choice, innovation</li> <li>○ Fair valuation of benefit and costs</li> <li>○ Coordination with wholesale markets</li> <li>○ Economic and system efficiency</li> <li>○ Avoidance or mitigation of emissions</li> <li>○ Consistency with regulatory objectives and requirements</li> </ul> </li> <li>• The Order also adopted rules for consumer protections applicable to DER providers, including microgrids</li> </ul>
<p><b>Outputs</b></p>	<ul style="list-style-type: none"> <li>• Identify purpose and definition of market rules</li> <li>• Identify and prioritize types of rules needed to most effectively animate the market</li> <li>• Identify recommendations on which rules need to be uniform across all DSP markets, and where there should be uniformity of rules/requirements between DSP markets and wholesale markets.</li> <li>• Identify the key questions that need to be answered to specify each rule</li> <li>• Identify barriers that might preclude participation of DERs in multiple markets (e.g. demand response, capacity reserve etc.)</li> <li>• Identify remaining barriers that need to be addressed to better enable competitive markets.</li> </ul>
<p><b>Level of detail</b></p>	<ul style="list-style-type: none"> <li>• Identify preliminary rules and process to create each one, but not the actual creation or design of each rule</li> </ul>
<p><b>Needed resources</b></p>	<ul style="list-style-type: none"> <li>• Assessment of national best practices and approaches to market rule development</li> </ul>

	<ul style="list-style-type: none"> <li>• Assessment of other processes currently underway to specify market rules related to DER participation and integration</li> <li>• Assessment of interactions with NYISO wholesale market rules related to DER participation</li> </ul>
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*D. Platform Technology Process & Report*

Purpose & Objectives:

Pursuant to the February 26, 2015 Order, one of the objectives of the Platform Technology group is to identify incremental infrastructure investments that will serve system needs while also building DSP capabilities. Further, a specific purpose of the platform technology working group is to provide guidance for utility DSIPs related to near- and mid-term platform technology needs to support DSP implementation, as well as any other recommendations that require Commission action.

Broadly, the Platform Technology group will seek to answer:

- What is the set of platform technologies needed to support market design, while complementing and enhancing grid operations?
- What grid architecture layers<sup>2</sup> are within the scope of platform technology work as it relates to specific areas of architecture, and what grid architectural layers are areas out of scope?
- What are the standards and protocols for key DSP interfaces?
- If a pre-defined standard does not exist, what are the needs for a standard and the appropriate standards body to create it?
- What are the technology and human resource gaps and options that should be considered in near and mid-term associated with the operation of the DSP?

**Technologies within scope:**

- Technologies needed to enable expected market functions and associated transactions
- Technologies to optimize system efficiency (voltage control, loads, generation utilization etc.)
- Monitoring the distribution system to maintain balance, reliability and safety.

**Technologies outside scope:**

- Monitoring of assets (e.g. transformers, underground vaults etc.)

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<sup>2</sup> Four grid architecture layers apply:

Contextual – e.g., what you have today or as-is

Conceptual – e.g., what is it that you are trying to do

Logical – e.g., how do you want to do it (e.g. sensors, system management, etc.)

Physical – e.g., with what do you want to do it – e.g. SAP's IS/U platform.

**Note:** the utilities believe this needs to be in scope since, they argue, any entity seeking to effectively impact the loading of a feeder circuit with multiple DER asserts requires visibility into various assets on the circuit. Further discussion is required. Further, the asset monitoring can also provide knowledge needed to maintain system balance.

- Level of specificity will stop at “layer” of architecture selected by working group,
  - For example, specificity will not extend to selecting particular vendors or technologies

Topic Details:

**Task 1: Identify Technology Requirements to Support DSP Market**

<p><b>Foundational information/resources</b></p>	<ul style="list-style-type: none"> <li>• The Platform Technology Committee report addressed technology requirements to support DSP markets, and provided a preliminary technology matrix that assessed technology maturity, and well as a mapping of each technology to an associated policy objective.</li> <li>• The Straw Proposal indicated the technologies needed to achieve REV goals were available but required additional harmonization</li> <li>• An Appendix in the straw proposal detailed existing functions of existing distribution system technologies</li> <li>• The Straw Proposal identified the need to develop technical specifications</li> <li>• The Straw proposal suggested the subsequent stakeholder process “complete an assessment of technology availability and maturity and technology/functionality mapping and gap analysis, with a focus on identifying initial implementation shortcomings”</li> <li>• The Order outlined the required functionality of the DSP Market for achieving REV objectives</li> <li>• The Order indicated that enabling markets will require modernization of infrastructure and operations, particularly communication and data management</li> </ul>
<p><b>Outputs</b></p>	<ul style="list-style-type: none"> <li>• Principles to guide platform technology recommendations and investments (e.g. agnostic to ownership of DSP; plug &amp; play with diverse DER technologies)</li> <li>• Technology gap assessment to meet required functionalities and capabilities specified by Market Design group           <ul style="list-style-type: none"> <li>○ Current system: distribution system capabilities mapped to required DSP functionalities and capabilities</li> <li>○ Future needs: In one or more scenarios derived from the Innovation Workshop, additional distribution system capabilities needed</li> </ul> </li> <li>• Identification of key systems that need to be in place (e.g. communications system)</li> <li>• Other questions to be addressed</li> </ul>



	<ul style="list-style-type: none"> <li>○ What is the role for privately owned technology (e.g., meters owned by DER providers or customers)?</li> <li>○ How should platform technology be designed to maximize optionality and future proofing?</li> <li>○ Are Customer Information Systems capable of accommodating multiple rate changes and options? If not, what potential solutions are available?</li> </ul>
<b>Level of detail</b>	<ul style="list-style-type: none"> <li>● Principles may be concise and consistent with market principles adopted by the Commission in Track 1 Order</li> <li>● Technology gap assessment may be global, but utility-specific, and need not extend to specific distribution nodes, circuits, or technologies (with the exception of AMI and communication systems that need to be operational).</li> </ul>
<b>Needed resources</b>	<ul style="list-style-type: none"> <li>● Updated utility technology mapping results</li> <li>● Outputs as needed from parallel processes impacting task, i.e., BCA related to specific tasks, etc.</li> </ul>

**Task 2: Develop Technology Deployment Strategy**

<b>Foundational information/resources</b>	<ul style="list-style-type: none"> <li>● The Platform Technology Committee detailed current utility technology deployment plans contained in presentations from each of the regulated utilities</li> <li>● The Straw proposal identified phases of the REV market, as well as procurement mechanisms influencing deployment strategy</li> <li>● Party comments regarding the Straw Proposal addressed the need for AMI and related technologies as it relates to priority market functionalities (see above)</li> <li>● The Order noted near-term, transitional, and longer-term distinctions are useful for framing of actions taken by utilities to deploy needed technologies, but that these distinctions will change over time</li> <li>● The Order noted the DSIP is a central component of REV implementation, and therefore technology deployment, and will at a minimum contain the following components: <ul style="list-style-type: none"> <li>○ Actual and forecast system loads and capital spending projections</li> <li>○ Actual and forecast levels of DER</li> <li>○ Plans for encouraging market development of DER</li> <li>○ Plans for increasing DER in underserved markets</li> <li>○ Specific plans including cost estimates for building DSP capabilities</li> <li>○ A description of internal organization of DSP and traditional utility functions</li> </ul> </li> <li>● The Order established that the implementation of a carefully phased approach should begin without delay; implementation will take years and involve substantial party participation</li> <li>● Further, discussion in the Order endorsed third party investment to complement ratepayer-funded investments</li> <li>● The Order required DPS Staff to consult with market actors to explore how the DSP could be designed, owned, and operated</li> </ul>
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	<p>to instill market confidence, and to achieve the further development of market-based DER deployments</p> <ul style="list-style-type: none"> <li>• The Order notes REV markets will encourage technology deployment that works for the long term continuity of the electricity system as a whole, and reduces or mitigates system costs paid by all customers</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>• Recommendations on relevant system requirements/technologies to deploy, including: sensing and controls, communications, IT, operations, and AMI, where appropriate.</li> <li>• Specific recommendation on whether AMI is needed to provide critical functionalities and capabilities; DSP Staff may elect to incorporate recommendation into assessment of existing utility proposals related to AMI or Distributed Automation.</li> <li>• Guidance on how relevant system requirements should be deployed, across and within diverse utility systems, and over time (e.g., should AMI be deployed everywhere, or in a more targeted fashion?)</li> <li>• Target priority market and grid operational needs</li> </ul>
<b>Level of detail</b>	<ul style="list-style-type: none"> <li>• High-level guidance on conditions that guide technology deployment, to include guidance on where to optimally deploy technologies in different stages of the market. Specify systems and technology tasks that need to be universal across DSPs, at what stage. This task will not produce a detailed implementation plan.</li> </ul>
<b>Needed resources</b>	<ul style="list-style-type: none"> <li>• Linkage between NYISO load forecasts and proposed modified DSP forecast methodology</li> <li>• Utility load forecasts and investment plans for grid operations</li> <li>• Mapping of potential areas of grid investments for each utility (This should be linked to a methodology for determining locational value)</li> <li>• Potential valuation of areas where grid investments are needed (needs to be linked to BCA)</li> <li>• DER technology capability mapping to meet DSP needs</li> <li>• Outputs as needed from parallel processes impacting task, i.e., BCA related to specific tasks, etc.</li> </ul>

**Task 3: Identify Technical Capability Requirements of Market Participants**

<b>Foundational information/resources</b>	<ul style="list-style-type: none"> <li>• The Technology Platform Committee report noted Operational requirements may apply to DER providers as well as to utilities, DSPs, and other market actors</li> <li>• The Staff Straw proposal noted that to achieve the goal of a transactional platform for DER providers and customers, DSPs will need to coordinate operational requirements</li> <li>• Party comments regarding the Straw Proposal addressed functional requirements applicable to DER providers</li> <li>• The Order illustrated the roles of market actors, outlining technical capabilities required for participation</li> </ul>
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	<ul style="list-style-type: none"> <li>○ The focus is on DERs that have specific roles and obligations to the DSP and/or the utility/grid, and/or DERs that impact the power grid</li> <li>● The Order specifies that technology innovators and third party aggregators will develop products and services that enable full customer engagement</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>● Identification of installation/DER requirements (e.g. DER must be able to do x,y,z; telemetry and latency requirements)</li> <li>● Identification of reliability requirements</li> <li>● Identification of cyber-security requirements</li> <li>● Identification of scheduling/load forecasting requirements</li> <li>● Recommendations on M&amp;V of DER requirements and frequency</li> </ul>
<b>Level of detail</b>	<ul style="list-style-type: none"> <li>● Requirements should detail DER provider functional requirements, as well as market data and related commitment related to DER products and services. The level of detail of required DER provider functional requirements should give certainty to grid operators, but not be overly burdensome to DER providers or a threat to commercial proprietary interests. A purpose of DER data requirements is to provide reliability data to grid operators on DER resource commitment and availability to meet system reliability requirements.</li> </ul>
<b>Needed resources</b>	<ul style="list-style-type: none"> <li>● Utility operational requirements (needs) Note: NYS standards exist for interconnection and IEEE standards are being upgraded in key areas; ex. IEEE 1547- Smart Inverter technology</li> <li>● DER provider commitment information (fulfillment of utility needs and potential need for contracts)</li> <li>● DER provider needs (such as system data access, rapid interconnection, etc.)</li> </ul>

**Task 4: Identify Standards for Interfaces with DSP Market**

<b>Foundational information/resources</b>	<ul style="list-style-type: none"> <li>● The Platform Technology report detailed multiple interfaces between technologies and actors in the DSP market.</li> <li>● The Straw proposal provided supports for open standards related to technologies and interfaces.</li> <li>● The Staff straw proposal maintained the importance of establishing a clear “line of sight” from policy goals to functionality to technology investments. In furtherance of this goal, staff recommended the process pursue: <ul style="list-style-type: none"> <li>○ Further explore, and adopt as appropriate, a standard communications architecture (e.g. NIST 3.0, Open ADR, and others) to enable interoperability with multiple end use devices and networks;</li> <li>○ Explore fee based options to facilitate data transmission among market participants, potentially working with mobile carriers and the FCC</li> </ul> </li> <li>● The Order adopted guidelines for market design, establishing that market rules and technology standards will be uniform</li> </ul>
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	<p>statewide to encourage liquidity and participation</p> <ul style="list-style-type: none"> <li>• Further, the Order stated DSP regulation will impose standards for business practices and other protections necessary to protect consumer interests</li> <li>• The Order calls for upgraded design, installation, and maintenance standards for electrical infrastructure</li> </ul>
<b>Outputs</b>	<ul style="list-style-type: none"> <li>• Prioritized list of standards that acknowledge communications at interfaces between: <ul style="list-style-type: none"> <li>○ DSP/ NYISO</li> <li>○ DSP/DSP</li> <li>○ DSP/DER</li> <li>○ DER/DER</li> <li>○ Microgrid/DSP</li> </ul> </li> <li>• Identify types of standards needed, which exist and can be adapted, and which do not exist</li> <li>• For those that do not exist, recommendations on next steps to develop and which standards organization should support</li> <li>• Recommend on-going process for standards development and updating</li> <li>• Common data formats accessible to DER providers and from DER providers</li> <li>• Common communication requirements</li> </ul>
<b>Level of detail</b>	<ul style="list-style-type: none"> <li>• Communication interface must be specific to each DSP, but also must ensure standard interface to customers across New York. Common data formats and protocols must be clear and specific to technology. Common communication requirements must apply to different layers of network architecture.</li> </ul>
<b>Needed resources</b>	<ul style="list-style-type: none"> <li>• Current NY utility and meter data formats</li> <li>• Solicit optimal utility, meter, and DER data formats (common time stamp, .csv format, etc.)</li> </ul>

**4. Formation of the Working Groups and Task Groups**

The work load and schedule of the MDPT Group is ambitious, and for the objectives to be accomplished it was deemed essential that all Working Group members be actively engaged in carrying out the Group’s proposed scope of work. Accordingly, the Working Group members were organized into the following Task Groups, with each group having lead coordinators and deputy coordinators to ensure the work was carried out on schedule and in conformance with the overall MDTP scoping document. The Task Groups are listed below, along with their primary focus and the designated Working Group member serving as the Coordinator.

1. Market Design Task Group 1: Identify Market Actors and Interactions, Cathy Pasion, City of New York
2. Market Design Task Group 2: Identify DSP Functions and Capabilities – Ryan Hanley, Solar City
3. Market Design Task Group 3: Identify Near and Mid-Term DSP Products and Transactional Mechanisms, Peter Fuller, NRG
4. Market Design Task Group 4: Develop Use Cases, Michael Voltz, PSE&G

5. Market Design Task Group 5: Specify Near Term Data Needs and Transparency requirements, Steven Wemple, Con Ed Solutions
6. Market Design Task Group 6: Clarify Typology of Market Rules, Marji Phillips, Direct Energy
7. Platform Technology Task Group 1: Technology to Support the DSP Platform, Ron Ambrosio, IBM
8. Platform Technology Task group 2: Technology Deployment Strategy Rob Sheridan, National Grid
9. Platform Technology Task Group 4, Interface Standards, Gale Horst, EPRI (Note: Platform Technology Task Groups 2 and 4 and splitting the previously identified topic area of Platform Technology Task Group, Technology Capability Requirements).
10. Platform Technology Task Group 5, Vision of the Future market, Doug Houseman, Innovation and Technology Inc.

## **5. Major Milestones and Timeline**

The following milestone dates will guide the work and outcomes of the MDPT process:

- Week of April 15, 2015 MDPT core team posts preliminary drafts of task group work in progress on the core team website (see below)
- Week of April 20, 2015 Approximate dates for MDPT in-person meeting
- Week of May 11, 2015 Approximate dates for MDPT in-person meeting
- Week of May 25, 2015 MDPT draft recommendations available for stakeholder input
- Week of June 1, 2015 Approximate dates for MDPT in-person meeting
- Week of June 22, 2015 Approximate dates for MDPT in-person meeting
- July 1, 2015 Per the February 26 Order, MDPT core team submit report to PSC
- August 3, 2015 Per the February 26 Order, Staff, in consultation with utilities and other interested parties, to issue detailed guidance regarding the contents of DSIPs
- December 15, 2015 Per the February 26 Order, each utility files a DSIP