Department of Public Service
Staff Whitepaper

Guidance for
2018 DSIP Updates

April 26, 2018

DPS Staff Whitepaper: Guidance for 2018 DSIP Updates

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1 Introduction and Background

On February 26, 2015, in its Reforming the Energy Vision (REV) proceeding, the Commission issued an Order Adopting Regulatory Policy Framework and Implementation Plan[1], also known as the Track One Order, which articulates a transformation to a future electric industry in New York State that incorporates and makes optimal use of distributed resources and dynamic load management. Among other things, the Track One Order requires New York's regulated electric utilities to provide Distributed System Platform (DSP) services to enable third-party providers of distributed energy resources (DER) to deliver value to both customers and the electric system. Those DSP services combine planning, operations, and market functions. The processes used to design and implement the DSP services are described by the utilities' Distributed System Implementation Plans (DSIP).

In its subsequent Guidance Order[2], the Commission directed the regulated utilities to prepare and submit three filings in 2016: (1) a plan and associated timeline for a formal stakeholder engagement process to be executed during DSIP development; (2) an Initial DSIP filing from each utility addressing its current system state and identifying immediate changes that could be made to progress toward achievement of New York State's energy goals; and, (3) a Supplemental DSIP - prepared and filed by the joint utilities, addressing the tools, processes, and protocols, that would be developed jointly, or according to shared standards, for the purposes of planning, implementing, and operating a safe and reliable electric system that dynamically manages distributed resources through the use of transactive market functions. In the Guidance Order, the Commission directed the utilities to provide detailed information about their respective investment plans, and emphasized that the recovery of costs associated with the utilities' DSP implementations would be addressed through individual utility rate cases and/or other proceedings.

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1 CASE 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015) (Track One Order).

2 CASE 14-M-0101, Order Adopting Distributed System Implementation Plan Guidance (issued April 20, 2016) (Guidance Order).

In compliance with the Guidance Order, the utilities each filed their Initial DSIPs on July 31, 2016 and jointly filed a Supplemental DSIP on November 1, 2016. On March 9, 2017, following its review of public comments, the Commission issued a subsequent Order on DSIP Filings[3] which directed specific utility actions related to key areas of development.

Integration of DER into utility planning, operations, and markets has evolved and progressed since the 2016 Initial and Supplemental filings. The utilities have begun making improvements in their electric distribution infrastructures and information systems to support DER integration. The utilities have also developed tools and made available certain information to help guide DER developers. Markets are being developed to further enable the integration of distributed resources.

2 Utility Filings

Each utility should file a DSIP Update which provides detailed information about the utility's planned DSP implementation. In addition, following further developments, the utilities should jointly prepare and file a subsequent supplemental report addressing their planned market organization and functions which will enable transactions involving distribution level DER products and services.

2.1 DSIP Updates

Many electric utility functions and components are changing as the utilities evolve to fully integrate DERs into their operations and business models. The Guidance Order directed the utilities to file updated DSIPs every two years, beginning in 2018, to help stakeholders develop and maintain their awareness and understanding of the utilities' transition. As with the initial DSIPs, filed in 2016, the principal purpose of the DSIP Updates is to fully and clearly describe the processes and tools used by the utilities as well as those currently or soon to be provided to DER developers/operators and other stakeholders. Each utility should individually file, no later than July 31, 2018, an updated DSIP covering the five-year period ending July 31, 2023. Public comments regarding each DSIP Update filing will be

[3] Cases 14-M-0101 et al., Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order on Distributed System Implementation Plan Filings (issued March 9, 2017).

due 60 days after notice of the filing is published in the State Register. As discussed further in the detailed guidance below, the 2018 DSIP Updates should:

1) Report on the utility's progress thus far;
2) Describe in detail the utility's plans for implementing all necessary policies, processes, resources, and standards;
3) Identify and describe how to access all the tools and information that can be used by DER developers and other third parties to help them understand utility system needs and potential business opportunities;
4) Describe how the utility's planning efforts are organized and managed; and,
5) Describe how the utility's implementation efforts are organized and managed.

2.2 DSP Market Design and Integration Report

Market functions - performed by DSPs to enable the transaction of distribution level DER products and services - will be needed within the five-year planning horizon of the DSIP Update. Implementing those functions will involve integrating policies, programs, technical capabilities, and wholesale markets for DER, all of which are not yet fully developed. Nonetheless, the utilities should begin identifying, characterizing, and explaining their anticipated DSP market functions along with many of the DSP policies, processes, and resources needed to support them. Following further utility development efforts and Staff guidance, the Joint Utilities should prepare and file a DSP Market Design and Integration Report which identifies, describes, and explains their jointly planned market organization and functions along with the policies, processes, and resources needed to support them. The Market Design and Integration Report should be provided as a supplemental filing to the DSIP filings. Among other details, the supplemental report should include, but not be limited to, the following:

1) Describe in detail the roles and responsibilities of the utilities, the NYISO, and other parties involved in planning and executing integrated market functions which accommodate and productively employ DERs.

2) Describe and explain the current status, goals, and phased development plan with timelines and deliverables for:
   a. integrating and evolving the present methods for valuing and compensating DER resources (e.g. NWA, DLM, VDER approaches) with more dynamic DSP-based methods;
   b. dynamically configuring and optimizing aggregations of DERs to maximize grid and customer benefits while minimizing overall costs;
   c. coordinating DER services for distribution and bulk system functions;
   d. quantifying the utility costs incurred for supporting the installation and operation of each DER;
   e. providing the types of cyber protection needed for strongly securing the DSP's market functions; and,
   f. timely restoring interrupted DSP market functions.

3 DSIP Update General Requirements

Maintaining a full and timely exchange of DSIP information between the utilities and stakeholders is critical to achieving the most beneficial deployment and use of DERs. Key areas of emphasis should include: the purposeful development of stakeholder tools and information sources useful to DER providers in fostering productive DER development; collecting, managing, and sharing system and customer data; and, advances toward an integrated planning environment.

3.1 Guidelines Applicable to All Topical Sections

Throughout the DSIP Update, the utility should provide planning and implementation details which will help the utilities and stakeholders align their respective needs and capabilities as the electric system evolves. The DSIP Update filing should fully describe the information, capabilities, and actions delivered by the utility while clearly identifying and explaining how specific stakeholder needs are served while also fully describing and explaining the utility's needs for stakeholder information, including capabilities and actions to enable specific outcomes. Further, the filing should describe how the utility will ensure that the information and tools provided to stakeholders effectively deliver the intended support and do not lead to unintended problems.

Sections 4.1 through 4.14 specify the topical areas and specific requirements that should be addressed in the DSIP Update. In addition to the specific topical area specifications, the following information requirements are applicable to ALL topical areas and MUST be included for each section of the DSIP Update:

1) Context and Background
   a. Describe how the associated policies, processes, resources, standards, and capabilities have evolved since the initial DSIP filing in 2016;
2) Implementation Plan, Schedule and Investments
   a. Current Progress
      i. Describe the current implementation as of July 31, 2018;
      ii. Describe how the current implementation supports stakeholders' current and future needs;
   b. Future Implementation and Planning
      i. Describe the future implementation that will be deployed by July 31, 2023;
      ii. Describe how the future implementation will support stakeholders' needs in 2023 and beyond;
      iii. Identify and characterize the work and investments needed to progress from the current implementation to the planned future implementation;
      iv. Describe and explain the planned timing and sequence of the work and investments needed to progress from the current implementation to the planned future implementation;
3) Risks and Mitigation
   a. Identify and characterize any potential risk(s) and/or actual issue(s) that could affect timely implementation and describe the measures taken to mitigate the risk(s) and/or resolve the issue(s);
4) Stakeholder Interface
   a. Describe when and how DER developer needs are identified and incorporated into DSIP design; how the needs will be met over time with clear improvements in functionality, validity, and usefulness; when and how support for specific stakeholder needs will begin, increase, and/or improve as the implementation progresses; and,

b. Describe the means and methods for effectively informing and engaging associated stakeholders as planning, design, and implementation progress so that the outputs as much as feasible effectively address the needs of both utility and DER developers and stakeholders.

To describe the details of the current and future implementations, the utility should use system diagrams, process flow diagrams, tables, and narrative text as needed for clarity and thoroughness. When describing the progression from the current implementation to the future implementation, the utility should use narrative text, Gantt charts, and calendars which present and explain the planned sequence and timing of the notable development activities, dependencies, and milestones.

3.2 Tools and Information Sources

Most of the sections below give guidance for describing the tools and information sources which the utility should provide to stakeholders for specific purposes. In addition to describing those specific resources throughout the body of the DSIP Update, the utility's filing should also include an appendix which inventories all DSIP-related tools and information sources provided to DER developers/operators, customers, and other stakeholders. The appendix should serve as an easy-to-use single point of reference which identifies, characterizes, and provides instructions for accessing/using each tool and information source.

In addition to the appendix filed as part of the DSIP Update, the utility should establish and maintain an up-to-date, online version of the inventory which stakeholders can readily access and use via the web. Links embedded in the online inventory, should enable stakeholders to go directly to the resources that are useful to them.

4 DSIP Update Topical Section Specifications

Along with satisfying the general guidelines applicable to all topical sections (see Section 3.1), the DSIP Update should provide additional information specified in each of the following sections (4.1 – 4.14). The DSIP Update should include a section that aligns with each of the following topical sections and each section should include the required general and topic-specific information.

4.1 Integrated Planning

The utility's electric system plan must position the utility to timely integrate an increasing number and variety of DERs while maintaining or improving safety, reliability, quality, and affordability of service. Utility planning analyses based on known information and advanced forecasts will have to evaluate an increasingly complex and dynamic system environment where the combined behaviors and mutual effects of loads and supply resources can vary significantly.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to the utility resources and capabilities which support integrated electric system planning:

1) The means and methods used for integrated system planning.
2) How the utility's means and methods enable probabilistic planning which effectively anticipates the inter-related effects of distributed generation, energy storage, electric vehicles, beneficial electrification, and energy efficiency.
3) How the utility ensures that the information needed for integrated system planning is timely acquired and properly evaluated.
4) The types of sensitivity analyses performed and how those analyses are applied as part of the integrated planning process.
5) How the utility would timely adjust its integrated system plan if future trends differ significantly with predictions, both in the short-term and in the long-term.
6) The factors unrelated to DERs - such as aging infrastructure, electric vehicles, and beneficial electrification - which significantly affect the utility's integrated plan and describe how the utility's planning process addresses each of those factors.
7) How the means and methods for integrated electric system planning evaluate the effects of potential energy efficiency measures.
8) How the utility will inform the development of its integrated planning through best practices and lessons learned from other jurisdictions.

4.2 Advanced Forecasting

Utility planners and operators, DER developers and operators, and other stakeholders all require load and supply forecasts which are timely, accurate, and detailed enough to support both short-term and long-term planning. Such forecasts are an important factor in predicting the hosting capacity available at existing and potential DER locations and are necessary for efficient development and use of grid resources. As the variety of methods for using DERs to address electric system needs expands, utilities must perform advanced forecasting analyses which integrate an increasing number and variety of DERs into their load and supply forecasts.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to the utility resources and capabilities which enable advanced electric system forecasting and provide the most current forecast results:

1) Identify where and how DER developers and other stakeholders can readily access, navigate, view, sort, filter, and download up-to-date load and supply forecasts.
2) Identify and characterize each load and supply forecasting requirement identified from stakeholder inputs.
3) Describe in detail the existing and/or planned forecasts produced for third party use and explain how those forecasts fulfill each identified stakeholder requirement for load and supply forecasts.
4) Describe the spatial and temporal granularity of the system-level and local-level load and supply forecasts produced.
5) Describe the forecasts provided separately for key areas including but not limited to photovoltaics, energy storage, electric vehicles, and energy efficiency.
6) Describe the advanced forecasting capabilities which are/will be implemented to enable effective probabilistic planning methods.
7) Describe how the utility's existing/planned advanced forecasting capabilities anticipate the inter-related effects of distributed generation, energy storage, electric vehicles, beneficial electrification, and energy efficiency.

8) Describe in detail the forecasts produced for utility use and explain how those forecasts fulfill the evolving utility requirements for load and supply forecasts.
9) Describe the utility's specific objectives, means, and methods for acquiring and managing the data needed for its advanced forecasting methodologies.
10) Describe the means and methods used to produce substation-level load and supply forecasts.
11) Describe the levels of accuracy achieved in the substation-level forecasts produced to date for load and supply.
12) Describe the substation-level load forecasts provided to support analyses by DER developers and operators and explain why the forecasts are sufficient for supporting those analyses.
13) Provide sensitivity analyses which explain how the accuracy of substation-level forecasts is affected by distributed generation, energy storage, electric vehicles, beneficial electrification, and energy efficiency measures.
14) Identify and characterize the tools and methods the utility is using/will use to acquire and apply useful forecast input data from DER developers and other third parties.
15) Describe how the utility will inform its forecasting processes through best practices and lessons learned from other jurisdictions.
16) Describe new methodologies to improve overall accuracy of forecasts for demand and energy reductions that derive from EE programs and increased penetration of DER. In particular, discuss how the increased potential for inaccurate load and energy forecasts associated with out-of-model EE and DER adjustments will be minimized or eliminated.

4.3 Grid Operations

The utility must enable a much more dynamic, data-driven, multi-party mode of grid operations where DERs effectively generate customer value by increasing efficiency, stability, and reliability in both the distribution system and the bulk electric system. To achieve this outcome, the utility must develop and/or substantially modify a wide range of components encompassing operating policies and processes, advanced information systems, extensive data communications infrastructure, widely distributed sensors and control devices, and grid components such as switches, power flow controllers, and solid-state transformers.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to the utility resources and capabilities needed to transform grid operations in both the distribution system and the bulk electric system:

1) Describe in detail the roles and responsibilities of the utility and other parties involved in planning and executing grid operations which accommodate and productively employ DERs.
2) Describe other role and responsibility models considered and explain the reasons for choosing the planned model.
3) Describe how roles and responsibilities have been/will be developed, documented, and managed for each party involved in the planning and execution of grid operations.
4) Describe in detail how the utilities and other parties will provide processes, resources, and standards to support planning and execution of advanced grid operations which accommodate and extensively employ DER services. The information provided should address:
    a. organizations;
    b. operating policies and processes;
    c. information systems for system modeling, data acquisition and management, situational awareness, resource optimization, dispatch and control, etc.;
    d. data communications infrastructure;
    e. grid sensors and control devices;
    f. grid infrastructure components such as switches, power flow controllers, and solid-state transformers;
    g. cyber security measures for protecting grid operations from cybersecurity threats; and,
    h. cyber recovery measures for restoring grid cyber operations following cyber disruptions.
5) Describe the utility resources and capabilities which enable automated Volt-VAR Optimization (VVO). The information provided should:
    a. identify where automated VVO is currently deployed in the utility's system;
    b. in both technical and economic terms, provide the energy loss and demand reductions achieved with the utility's existing automated VVO capabilities;

c. describe in detail the utility's approach to evaluating the business case for implementing automated VVO on a distribution circuit;
d. provide a preliminary benefit/cost analysis (using preliminary cost and benefit estimates) for adding/enhancing automated VVO capabilities throughout the utility's distribution system;
e. provide the utility's plan and schedule for expanding its automated VVO capabilities;
f. describe the utility's planned approach for securely utilizing DERs for VVO functions; and,
g. in both technical and economic terms, provide the predicted energy loss and demand reductions resulting from the expanded automated VVO capabilities.

6) Describe the utility's approach and ability to implement advanced capabilities:
   a. Identify the existing level of system monitoring and distribution automation.
   b. Identify areas to be enhanced through additional monitoring and/or distribution automation.
   c. Describe the means and methods used for deploying additional monitoring and/or distribution automation in the utility's system.
   d. Identify the benefits to be obtained from deploying additional monitoring and/or distribution automation in the utility's system.
   e. Identify the capabilities currently provided by Advanced Distribution Management Systems (ADMS).
   f. Describe how ADMS capabilities will increase and improve over time;
   g. Identify other approaches or functionalities used to better manage grid performance and describe how they are/will be integrated into daily operations.

4.4 Energy Storage Integration

Significant energy storage integration will be needed within the five-year planning horizon of the DSIP Update filing. Areas of particular interest related to energy storage include:

- existing energy storage resources in the distribution system;
- the utility's planned energy storage projects;
- a five-year energy storage deployment forecast;
- potential energy storage locations and applications that could benefit customers and/or the electric system;
- resources and functions needed for integrating energy storage; and,
- the utility's alignment with New York State's energy storage goals and initiatives.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following details for the areas of interest listed above:

1) Provide the locations, types, capacities (power and energy), configurations (i.e. standalone or co-located with load and/or generation), and functions of existing energy storage resources in the distribution system.
2) Describe the utility's current efforts to plan, implement, and operate beneficial energy storage applications. Information provided should include:
    a. a detailed description of each project, existing and planned, with an explanation of how the project fits into the utility's long range energy storage plans;
    b. the original project schedule;
    c. the current project status;
    d. lessons learned to-date;
    e. project adjustments and improvement opportunities identified to-date; and,
    f. next steps with clear timelines and deliverables.
3) Provide a five-year forecast of energy storage locations, types, capacities, configurations, and functions.

4) Identify, describe, and prioritize the current and future opportunities for beneficial use of energy storage located in the distribution system. Uses considered should encompass functions which benefit utility customers, the distribution system, and/or the bulk power system. Each opportunity identified should be characterized by:
   a. its location;
   b. the energy storage capacity (power and energy) provided;
   c. the function(s) performed[4];
   d. the period(s) of time when the function(s) would be performed; and,
   e. the nature and economic value of each benefit derived from the energy storage resource.
5) Identify and describe all significant resources and functions that the utility and stakeholders[5] use for planning, implementing, monitoring, and managing energy storage at multiple levels in the distribution system[6].
   a. Explain how each of those resources and functions supports the utility's needs.
   b. Explain how each of those resources and functions supports the stakeholders' needs.
6) Describe the means and methods for determining the real-time status, behavior, and effect of energy storage resources in the distribution system. Information produced by those means and methods should include:
   a. the amount of energy currently stored (state of charge);
   b. the time, size, duration, energy source (grid and/or local generation), and purpose for each charging event;
   c. the time, size, duration, consumer (grid and/or local load), and purpose of each energy storage discharge;
   d. the net effect (amount and duration of supply or demand) on the distribution system of each charge/discharge event (considering any co-located load and/or generation); and,

[4] The functions evaluated should include (but not be limited to) renewables ramping/smoothing, resource capacity, load leveling/shifting, Volt/VAR support and optimization, frequency regulation, grid resilience, and T&D asset optimization.

[5] customer, developer, vendor, owner, operator

[6] region, area, substation, circuit, tap, and transformer

e. the capacity of the distribution system to deliver or receive power at a given location and time.

7) Describe the means and methods for forecasting the status, behavior, and effect of energy storage resources in the distribution system at future times. Forecasts produced by the utility should include:
   a. the amount of energy stored (state of charge);
   b. the time, size, duration, energy source (grid and/or local generation), and purpose of charging events;
   c. the time, size, duration, consumer (grid and/or local load), and purpose of energy storage discharges; and,
   d. the net effect on the distribution system of each charge/discharge event (considering any co-located load and/or generation); and,
   e. the capacity of the distribution system to deliver or receive power at a given location and time.
8) Identify the types of customer and system data that are necessary for planning, implementing, and managing energy storage and describe how the utility provides those data to developers and other stakeholders.
9) By citing specific objectives, means, and methods describe in detail how the utility's accomplishments and plans are aligned with the objectives established in New York State's recently signed Energy Storage Deployment legislation[7] and Governor Cuomo's new initiative to deploy 1,500 megawatts of energy storage in New York State by 2025.
10) Explain how the Joint Utilities are coordinating the individual utility energy storage projects to ensure diversity of both the energy storage applications implemented and the technologies/methods employed in those applications.

[7] A6571. Assemb. Reg. Sess. 2017-2018 (N.Y. 2017).

4.5 Electric Vehicle Integration

Utility resources and capabilities which support electric vehicle (EV) integration at all levels in the distribution system[8] will likely be needed within the five-year planning horizon of the DSIP Update filing. This is being driven by rapid progress toward lower vehicle costs, longer range per charge, and faster charging rates which are nearing the point of "gas parity" when significant EV adoption is generally predicted to begin. Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to electric vehicle integration:

1) Using a common framework (organization, format, semantics, definitions, etc.) developed jointly with the other utilities, identify and characterize the existing and anticipated EV charging scenarios in the utility's service territory. Each scenario identified should be characterized by:
   a. the type of location (home, apartment complex, store, workplace, public parking site, rest stop, etc.);
   b. the number and spatial distribution of existing instances of the scenario;
   c. the forecast number and spatial distribution of anticipated instances of the scenario over the next five years;
   d. the type(s) of vehicles charged at a typical location (commuter car, bus, delivery truck, taxi, ride-share, etc.);
   e. the number of vehicles charged at a typical location, by vehicle type;
   f. the charging pattern by vehicle type (frequency, times of day, days of week, energy per charge, duration per charge, demand per charge);
   g. the number(s) of charging ports at a typical location, by type;
   h. the energy storage capacity (if any) supporting EV charging at a typical location;
   i. an hourly profile of a typical location's aggregated charging load over a one year period;
   j. the type and size of the existing utility service at a typical location;
   k. the type and size of utility service needed to support the EV charging use case;

[8] region, area, substation, circuit, tap, and transformer

2) Describe and explain the utility's priorities for supporting implementation of the EV charging use cases anticipated in its service territory.
3) Identify and describe all significant resources and functions that the utility and stakeholders[9] use for planning, implementing, monitoring, and managing[10] EV charging at multiple levels in the distribution system[11].
   a. Explain how each of those resources and functions supports the utility's needs.
   b. Explain how each of those resources and functions supports the stakeholders' needs.
4) Identify the types of customer and system data that are necessary for planning, implementing, and managing EV charging infrastructure and services and describe how the utility provides those data to interested third-parties.
5) By citing specific objectives, means, and methods describe in detail how the utility's accomplishments and plans are aligned with New York State policy, including its established goals for EV adoption[12].
6) Describe the utility's current efforts to plan, implement, and manage EV-related projects. Information provided should include:
   a. a detailed description of each project, existing and planned, with an explanation of how the project fits into the utility's long range EV integration plans;
   b. the original project schedule;
   c. the current project status;
   d. lessons learned to-date;
   e. project adjustments and improvement opportunities identified to-date;

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9 customer, developer, vendor, owner, operator

10 Managing EV charging should include controlling chargers to manage usage during peak time; shifting off-peak start times to avoid new peak at start of off-peak period; or, vehicle to grid applications to draw power from EV batteries at peaks.

11 region, area, substation, circuit, tap, and transformer

12 The "Multi-State ZEV Task Force" sets the goal of 3.3 million ZEVs by 2025. New York's share of this is 850,000 by 2025. The organization's action plan and memorandum of understanding can be found at https://www.zevstates.us/about-us/ .

f. next steps with clear timelines and deliverables;

7) Explain how the Joint Utilities are coordinating the individual utility EV-related projects to ensure diversity of both the EV integration use cases implemented and the technologies/methods employed in those use cases.
8) Describe how the utility is coordinating with the efforts of the New York State Energy Research and Development Authority (NYSERDA), the New York Power Authority (NYPA), New York Department of Environmental Conservation (DEC), and DPS Staff to facilitate statewide EV market development and growth.

4.6 Energy Efficiency Integration and Innovation

Energy Efficiency integration with a focus on innovative market enabling tools and approaches is an essential utility function that needs to be thoroughly addressed within the five-year planning horizon of the DSIP Update filing. The utilities should provide the information specified below to show how their joint and individual efforts are fully integrating current and expanded energy efficiency efforts into their system planning and forecasting functions. The utilities should also describe how new tools and approaches are being used to support the growth of a more dynamic market of service providers that deliver energy efficiency at a reduced cost by leveraging private capital and financing to deliver greater customer value while optimizing the grid value of these services. Throughout this time period each utility will evolve their current ETIPs into a System Energy Efficiency Plans (SEEPs) describing the entirety of the utility's expanded reliance on and use of cost effective energy efficiency to support their distribution system and customer needs. ETIPs / SEEPs will continue to be filed separately in accordance with Staff issued ETIP / SEEP Content Guidance but the DSIP must incorporate and plan for the integration and reliance on these expanded energy efficiency resources and should include a link to the most recent ETIP/SEEP filing.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to energy efficiency:

1) The resources and capabilities used for integrating energy efficiency within system and utility business planning, including among other things, infrastructure deferral opportunities as part of NWAs, peak and load reduction and/or load or energy shaping with an explanation of how integration is supported by each of those resources and capabilities, or other shared savings / benefits opportunities.
2) The locations and amounts of current energy and peak load reductions attributable to energy efficiency and how the utility determines these.
3) How the utility develops and provides its short and long-term forecasts of the locations, times, and amounts of future energy and peak load reductions achievable through energy efficiency.
4) How the utility assesses energy efficiency as a potential solution for addressing needs in the electric system and reducing costs.
5) How the utility collects, manages, and disseminates customer and system data (including energy efficiency project and load profile data) that is useful for planning, implementing, and managing energy efficiency solutions and achieving energy efficiency potential.
6) How the utility's accomplishments and plans are aligned with New York State climate and energy policies and incorporate innovative approaches for accelerating progress to ultimately align with a new 2025 energy efficiency target called for in Governor Cuomo's 2018 State of the State Address.
7) A description of lessons learned to date from energy efficiency components of REV Demonstration Projects with specific plans for scaled expansion of successful business model demonstrations. In addition, provide a description of each hypothesis being tested as part of energy efficiency components of ongoing Demonstration Projects and the anticipated schedule for assessment.
8) Explain how the utilities are coordinating on energy efficiency to ensure diversity of both the models demonstrated and the technologies/methods employed in those applications.
9) Describe how the utility is coordinating and partnering with NYSERDA's related ongoing statewide efforts to facilitate energy efficiency market development and growth.

4.7 Distribution System Data

The DSIP Update should describe the utility resources and capabilities which will enable timely and effective system data sharing. Based on data requirements derived from extensive stakeholder inputs, the utilities should collect, manage, and share a wide variety of detailed distribution system data. The shared data must enable DER developers/operators and other third parties to timely and effectively perform the analyses (engineering, operations, and business) needed to support well informed decisions. That enablement is materially affected by the types of data shared, the spatial and temporal granularity of the data, the accuracy of the data, the age of the data, data formats, and the methods used for sharing the data.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to Distribution System Data:

1) Identify and characterize each system data requirement derived from stakeholder input.
2) Describe in detail the resources and methods used for sharing each type of distribution system data with DER developers/operators and other third parties.
3) Describe where and how DER developers and other stakeholders can readily access, navigate, view, sort, filter, and download each type of shared distribution system data.
4) Describe how and when each type of data provided to DER developers/operators and other third parties will begin, increase, and improve as work progresses.
5) Identify and characterize the use cases which involve third party access to sensitive distribution system data and describe how the third party's needs are addressed in each case.
6) Identify each type of distribution system data which is/will be provided to third parties and whether the utility plans to propose a fee.
7) Describe in detail the ways in which the utility's means and methods for sharing distribution system data with third parties are highly consistent with the means and methods at the other utilities.

8) Describe in detail the ways in which the utility's means and methods for sharing distribution system data with third parties are not highly consistent with the means and methods at the other utilities. Explain the utility's rationale for each such case.

4.8 Customer Data

The DSIP Update should describe the utility resources and capabilities which provide or employ data describing customer energy consumption and production. Detailed time-series interval data describing customer energy consumption and production is beneficial to the utilities, DER developers, customers, and other stakeholders. The data enable both short-term and long-term analyses and decisions affecting many investments and behaviors which can materially improve customer value by reducing costs and/or improving service. The data's value is directly proportional to its usefulness which is affected by its accuracy, granularity, age, content, format, and accessibility. While efficient and timely access to the data is vital for each legitimate use, the data must be strongly protected from loss, theft, or corruption.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to Customer Data:

1) Date Types, Description and Management Processes
   a. Describe the type(s) of customer load and supply data acquired by the utility.
   b. Describe the accuracy, granularity, latency, content, and format for each type of data acquired.
   c. Describe in detail the utility's means and methods for creating, collecting, managing, and securing each type of data.
2) Data Uses, Access and Security
   a. Describe the means and methods that customers and their properly designated agents can use to acquire their load and supply data directly from their utility meters without going through the utility, should they want to.
   b. Identify and characterize the categories of legitimate users beyond customers and their properly designated agents who will be provided access to each type of data.

c. For each type of data, describe how its respective users will productively apply the data and explain why the data provided will be sufficient to fully support each type of application.
d. For each type of data, describe in detail the utility's policies, means, and methods for securely providing legitimate users with efficient, timely, and useful access to the data. Include information which thoroughly describes and explains the utility's approach to providing customer data to third parties who would use the data to identify and design service opportunities which benefit the utility and/or its customers.
e. Describe how the utilities are jointly developing and implementing uniform policies, protocols, and resources for controlling third party access to customer data.
f. Describe in detail the utility's policies, means, and methods for rigorously anticipating data risks and preventing loss, theft, or corruption of customer data.
g. Identify each type of customer data which is/will be provided to third parties at no cost to the recipient, and the extent to which the practice comports with DPS policies in place at the time, as appropriate.
h. Identify each type of customer data which the utility proposes to provide to third parties for a fee, and the extent to which the practice comports with DPS policies in place at the time, as appropriate. For each data type identified, describe the proposed fee structure and explain the utility's rationale for charging a fee to the recipient.
i. Describe in detail the ways in which the utility's means and methods for sharing customer data with third parties are highly consistent with the means and methods at the other utilities, and the extent to which these practices comport with DPS policies in place at the time, as appropriate.
j. Describe in detail the ways in which the utility's means and methods for sharing customer data with third parties are <u>not</u> highly consistent with the means and methods at the other utilities. Explain the utility's rationale for each such case.

3) Green Button Connect Capabilities

a. Describe where and how DER developers, customers, and other stakeholders can readily access up-to-date information about the areas where customer consumption data provided via Green Button Connect (GBC) is available or planned.
b. Describe how the utility is making customers and third parties aware of its GBC resources and capabilities.
c. Describe the utility's policies, means, and methods for measuring and evaluating customer and third-party utilization of its GBC capabilities.

4.9 Cyber Security

Utility cyber resources contain confidential customer and system data and perform functions which are essential to safe and reliable grid operations; consequently, the security, resilience, and recoverability of those resources is of paramount importance. Utilities must ensure that data is not lost, stolen, or corrupted and that cyber resources are not disabled, damaged, or destroyed by malicious acts, errors, accidents, or disasters.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to Cyber Security:

1) Describe in detail the utility policies, procedures, and assets that address the security, resilience, and recoverability of data stored and processes running in interacting systems and devices which are owned and operated by third-parties (NYISO, DER operators, customers, and neighboring utilities). Details provided should include:
   a. the required third-party implementation of applicable technology standards;
   b. the required third-party implementation of applicable procedural controls;
   c. the means and methods for verifying, documenting, and reporting third-party compliance with utility policies and procedures;
   d. the means and methods for identifying, characterizing, monitoring, reporting, and mitigating applicable risks;
   e. the means and methods for testing, documenting, and reporting the effectiveness of implemented security measures;

   f. the means and methods for detecting, isolating, eliminating, documenting, and reporting security incidents; and,
   g. the means and methods for managing utility and third-party changes affecting security measures for third-party interactions.

2) Describe in detail the security, resilience, and recoverability measures applied to each utility cyber resource which:
   a. contains customer data;
   b. contains utility system data; and/or,
   c. performs one or more functions supporting safe and reliable grid operations.
3) For each significant utility cyber process supporting safe and reliable grid operations:
   a. Provide and explain the resilience policy which establishes the utility's criteria for the extent of resource loss, damage, or destruction that can be absorbed before the process is disrupted;
   b. Provide and explain the recovery time objective which establishes the utility's criteria for the maximum acceptable amount of time needed to restore the process to its normal state;
   c. Provide and explain the plan for timely recovery of the process following a disruption; and,
   d. Describe each process, resource, and standard used to develop, implement, test, document, and maintain the plan for timely process data recovery.
4) Identify and characterize the types of cyber protection needed for strongly securing the utility's advanced metering resources and capabilities. Describe in detail the means and methods employed to provide the required protection.
5) Identify and characterize the requirements for timely restoring advanced metering resources and capabilities following a cyber disruption. Describe in detail the means and methods employed to provide the required recovery capabilities.

4.10 DER Interconnections

The utility resources and capabilities which enable DER interconnections to the distribution system are a critical early objective. Many of the details which identify and characterize those resources and capabilities are being worked out by the Interconnection Technology Working Group[13] (ITWG) and the Interconnection Policy Working Group[14] (IPWG) which are stakeholder collaboratives led jointly by Staff and NYSERDA. The goal of both working groups is to establish the requirements for standard resources, processes, specifications, and policies which foster efficient, timely, safe, and reliable DER interconnections.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to DER interconnections:

1) A detailed description (including the Internet address) of the utility's web portal[15] which provides efficient and timely support for DER developers' interconnection applications.
2) Where, how, and when the utility will implement and maintain a resource where DER developers and other stakeholders with appropriate access controls can readily access, navigate, view, sort, filter, and download up-to-date information about all DER interconnections in the utility's system. The resource should provide the following information for each DER interconnection:
    a. DER type, size, and location;
    b. DER developer;
    c. DER owner operator;
    d. DER operator;
    e. the connected substation, circuit, phase, and tap;
    f. the DER's remote monitoring, measurement, and control capabilities;

[13] http://www3.dps.ny.gov/W/PSCWeb.nsf/All/DEF2BF0A236B946F85257F71006AC98E?OpenDocument

[14] http://www3.dps.ny.gov/W/PSCWeb.nsf/All/0D7596DBBEF0380885257FD90048ADFA?OpenDocument

[15] Generally referred to as an "Interconnection Online Application Portal" or IOAP.

g. the DER's primary and secondary (where applicable) purpose(s); and,
h. the DER's current interconnection status (operational, construction in-progress, construction scheduled, or interconnection requested) and its actual/planned in-service date.

3) The utility's means and methods for tracking and managing its DER interconnection application process to ensure achievement of the performance timelines established in New York State's Standardized Interconnection Requirements.
4) Where, how, and when the utility will provide a resource to applicants and other appropriate stakeholders for accessing up-to-date information concerning application status and process workflows.
5) The utility's processes, resources, and standards for constructing approved DER interconnections.
6) The utility's means and methods for tracking and managing construction of approved DER interconnections to ensure achievement of required performance levels.
7) Where, how, and when the utility will provide a resource to DER developers and other stakeholders for accessing up-to-date information concerning construction status and workflows for approved interconnections.

4.11 Advanced Metering Infrastructure

Advanced Metering Infrastructure (AMI) provides grid-edge measurement, data acquisition, and control capabilities which are either essential or beneficial to a number of important functions in modern distribution system. Granular time-series data from smart meters and other intelligent devices at customers' premises enable advanced analyses, innovative rate designs, and customer engagement strategies which benefit both the customers and the grid. Voltage sensing and measurement functions support increased system efficiency and enable improved outage detection and restoration processes. Capabilities supporting DER measurement, monitoring, and control are essential for DER integration.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to AMI:

1) Provide a summary of the most up-to-date AMI implementation plans, including where AMI has been deployed to date.
2) Describe in detail where and how the utility's AMI provides capabilities which:
   a. help the utility integrate DERs into its system and operations;
   b. help DER developers plan and implement DERs;
   c. help DER operators plan and manage operation of their DERs;
   d. enable or enhance the utility's ability to implement and manage automated Volt-VAR Optimization (VVO);
   e. improve the utility's ability to prevent, detect, and resolve electric service interruptions;
   f. improve the utility's ability to implement rate programs which facilitate and promote customer engagement, DER development, and EV adoption;
3) Describe in detail how the AMI enables secure communication with and among devices at customers' premises to support customer engagement, energy efficiency, and innovative rates.
4) Describe where and how DER developers, customers, and other stakeholders can access up-to-date information about the locations and capabilities of existing and planned smart meters.

4.12 Hosting Capacity

Providing an electric distribution system with the capacity to host large scale DER integration is a key part of New York's energy vision. To achieve that outcome, the utilities must perform several functions to ensure that large amounts of DER can access and utilize hosting capacity in ways that are affordable, effective, efficient, and timely. The utilities have made significant early progress in producing and sharing information about the hosting capacity of their current systems. DER developers and other stakeholders value the new information as a significant improvement to the information which was previously available to them; however, more is needed in three areas.

First, as DER developers and other stakeholders access and use the utilities' hosting capacity information, it is becoming increasingly evident that assessments of currently available hosting capacity do not adequately inform DER development processes and decisions. DER developers and the utilities would both be better informed by hosting capacity forecasts which look ahead three to five

years. Once available, such forecasts would become the preferred resource for planning DER development.

Second, as grid operations evolve to accommodate and optimize significant DER development, some of those operations will come to rely on the availability of hosting capacity as a managed system resource. Such operations will continually require very current information about available hosting capacity throughout the distribution system. This means that the utilities should be prepared to timely increase the rate at which they produce and share their information about currently available hosting capacity.

And third, the availability of ample hosting capacity at a given location on the grid does not necessarily mean that other factors (i.e. space, accessibility, safety, zoning, customer interest, etc.) will also favor deploying a DER at that location. At the same time, there are many locations where circumstances strongly favor DER development; however, the amount of hosting capacity available at those locations is inadequate. This could mean that utilities will need to take measures to increase hosting capacity at attractive DER development sites in order to support the State's goals for integrating renewable energy resources. Considering these points, the utilities should be prepared to timely increase hosting capacity in their distribution systems.

The DSIP Update should provide detailed information related to assessing current hosting capacity, forecasting hosting capacity, and increasing hosting capacity to show that the utility is timely developing – either individually or jointly with one or more of the other utilities – the necessary information resources and capabilities associated with hosting capacity.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to hosting capacity:

1) The utility's current efforts to plan, implement, and manage projects related to hosting capacity. Information provided should include:
    a. a detailed description of each project, existing and planned, with an explanation of how the project fits into the utility's long range hosting capacity plans;
    b. the original project schedule;
    c. the current project status;

d. lessons learned to-date;
e. project adjustments and improvement opportunities identified to-date; and,
f. next steps with clear timelines and deliverables

2) Where and how DER developers/operators and other third parties can readily access the utility's hosting capacity information.
3) How and when the existing hosting capacity assessment information provided to DER developers/operators and other third parties will increase and improve as work progresses.
4) The means and methods used for determining the hosting capacity currently available at each location in the distribution system.
5) The means and methods used for forecasting the future hosting capacity available at each location in the distribution system.
6) How and when the future hosting capacity forecast information provided to DER developers/operators and other third parties will begin, increase, and improve as work progresses.
7) The utility's specific objectives and methods to:
   a. identify and characterize the locations in the utility's service area where limited hosting capacity is a barrier to productive DER development; and,
   b. timely increase hosting capacity to enable productive DER development at those locations.

4.13 Beneficial Locations for DERs and Non-Wires Alternatives

To help promote productive DER development, it is essential that the utility identify, characterize, and publicly present the locations in its service area where DERs and/or energy efficiency might provide significant benefits to the distribution system and/or to the bulk electric system. Based on its criteria for evaluating opportunities for non-wires alternatives (NWA), the utility then selects some of those locations for NWA procurements and/or energy efficiency measures that will benefit the distribution system.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to the

utility resources and capabilities supporting identification and presentment of beneficial locations for DERs and NWAs:

1) The resources provided to developers and other stakeholders for:
   a. accessing up-to-date information about beneficial locations for DERs and/or energy efficiency measures; and,
   b. efficiently sorting and filtering locations by the type(s) of capability needed, the timing and amount of each needed capability, the type(s) and value of desired benefit, the serving substation, the circuit, and the geographic area.
2) The means and methods for identifying and evaluating locations in the distribution system where:
   a. a NWA comprising one or more DERs and/or energy efficiency measures could timely reduce, delay, or eliminate the need for upgrading distribution infrastructure and/or materially benefit distribution system reliability, efficiency, and/or operations; and/or,
   b. one or more DERs and/or energy efficiency measures could reduce, delay, or eliminate the need for upgrading bulk electric system resources and/or materially benefit bulk electric system reliability, efficiency, and/or operations.
3) Locations where energy exported to the system, or load reduction, would be eligible for:
   a. compensation under the utility VDER Value Stack tariff;
   b. utility dynamic load management programs, including the Commercial System Relief Program, Distribution Load Relief Program, and Direct Load Control Program;
   c. and/or, increased value-based customer incentives for energy efficiency measures with load profiles that align with the system needs through utility energy efficiency programs or New York State Energy Research and Development Authority's (NYSERDA) Clean Energy Fund (CEF) programs, while ensuring utility-NYSERDA coordination.

4.14 Procuring Non-Wires Alternatives

DER development and use in the electric distribution system is stimulated when the utilities investigate and implement non-wires alternatives (NWAs) to traditional system upgrades. Through this process, the utilities, DER developers, and other stakeholders are learning how to cost effectively use DERs to reduce electric delivery costs while maintaining system reliability and safety.

Along with satisfying the general guidelines for information related to each topical area (see Section 3.1), the DSIP Update should provide the following additional details which are specific to the utility resources and capabilities supporting utility procurement of DERs as alternatives to traditional distribution system upgrades:

1) How the NWA procurement process works within utility time constraints while enabling DER developers to properly prepare and propose NWA solutions which can be implemented in time to serve the system need.
2) The NWA procurement means and methods; including:
    a. how the utility and DER developers time and expense associated with each procurement transaction are minimized;
    b. the use of standardized contracts and procurement methods across the utilities.
3) Where, how, and when the utility will provide a resource to DER developers and other stakeholders for accessing up-to-date information about current NWA project opportunities. For each opportunity, the resource should describe the location, type, size, and timing of the system need to be addressed by the project.
4) How the utility considers all aspects of operational criteria and public policy goals when selecting which DERs to procure as part of a NWA solution.
5) Where, how, and when the utility will provide DER developers and other stakeholders with a resource for accessing up-to-date information about all completed and in-progress NWA projects. The information provided for each project should:
    a. describe the location, type, size, and timing of the system need addressed by the project;
    b. describe the location, type, size, and provider of the selected alternative solution;
    c. provide the amount of traditional solution cost which was/will be avoided;

d. explain how the selected alternative solution enables the savings; and,
e. describe the structure and functional characteristics of the procurement transaction between the utility and the solution provider(s).

5 Other DSIP-Related Information

The following subsections describe other information of interest to DSIP stakeholders.

5.1 DSIP Governance

The DSIP Update should clearly and fully describe how the utility's DSIP activities and resources are organized and managed. The information provided should:

1) Describe the DSIP's scope, objectives, and participant roles and responsibilities. A participant could be a utility employee, a third party supporting the utility's implementation, or a party representing one or more stakeholder entities.
2) Describe the nature, organization, governance, and timing of the work processes that comprise the utility's current scope of DSIP work. Also describe and explain how the work processes are expected to evolve over the next five years. Workflow diagrams that show significant internal and external dependencies will be especially useful.
3) Identify and describe in detail the tools (i.e. project management, collaboration, and content management software) and information resources currently employed internally by the utility and/or presented for stakeholder use. Also describe and explain how the tools and information resources are managed and how they are expected to evolve over the next five years.
4) Describe the Joint Utilities of New York Website contents and functions which support aspects of the utility's implementation program. Provide specific examples to explain how those contents and functions help both the utility and its stakeholders.
5) Describe and explain the planned sequence and timing of key DSIP management activities and milestones. Using calendars, Gantt charts, and narrative text, provide information addressing management functions, collaborative processes (stakeholder engagement and Joint Utilities

coordination, for example), and development and maintenance of program tools and information resources.

6) Describe and explain the planned sequence and timing of the notable activities, dependencies, milestones, and outcomes affecting implementation. Using calendars, Gantt charts, and narrative text, provide information addressing all significant utility processes, resources, and capabilities. Explain how each notable outcome enables one or more significant DSP applications.

5.2 Marginal Cost of Service Study

The DSIP Update should include a publicly accessible web link to the latest version of the utility's Marginal Cost of Service Study.

5.3 Benefit Cost Analysis (BCA)

BCA Handbook

The DSIP Update should include a publicly accessible web link to the latest version of the utility's BCA Handbook.

BCA Calculations

BCA calculations must be transparent and publicly available, including the individual cost and benefit input parameters defined in the BCA framework order.