2019 Project Prioritization and Budgeting Process

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NEW YORK INDEPENDENT SYSTEM OPERATOR

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Agenda

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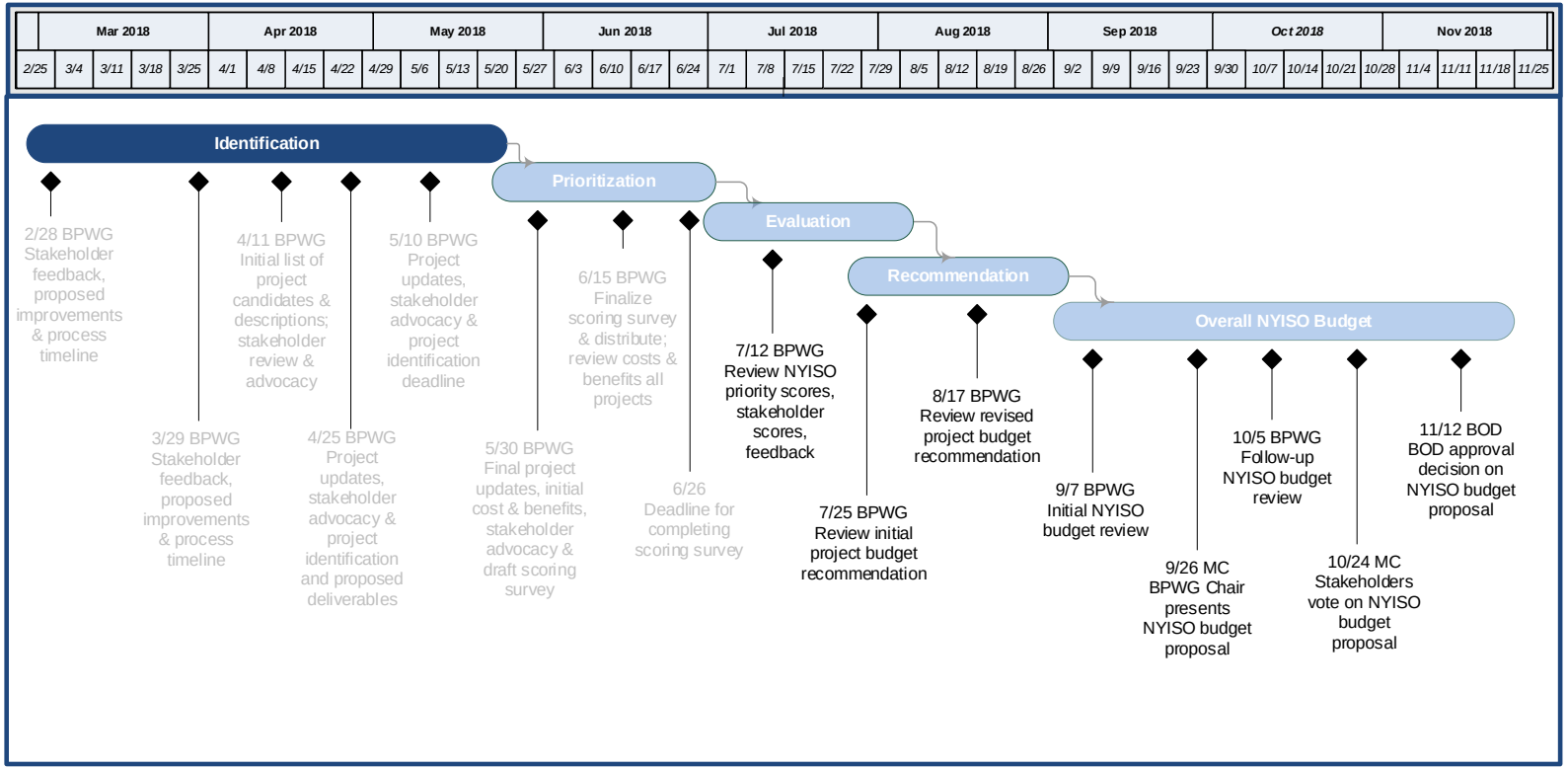
Project Prioritization Process

Phase	Description
Identification	This phase involves developing the list of project candidates taking into consideration regulatory obligations, strategic initiatives, State of the Market recommendations, necessary infrastructure enhancements, product plans, stakeholder feedback, etc.
Prioritization	The phase involves the NYISO and stakeholder scoring of projects. The NYISO scores projects using objective criteria that reflects strategic alignment, expected outcomes, risks, and ability to execute. Stakeholders score projects based on their organizational priorities via a survey mechanism.
Evaluation	This phase involves performing a feasibility assessment based on detailed cost and labor estimates, dependencies, priority scores, and stakeholder feedback.
Recommendation	This phase involves proposing a feasible set of project deliverables and related budget requirements. The proposal is refined as needed based on stakeholder feedback.

Project Prioritization Timeline



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Milestone Definitions

Milestone	Definition
Market Design Concept Proposed	NYISO has initiated, or furthered discussions with stakeholders that explore potential concepts to address opportunities for market efficiency or administration improvements.
Market Design Complete	NYISO has developed with stakeholders, a market design concept such that the proposal can be presented for a vote at the BIC or MC to define further action on the proposal.
Architectural Design	The architectural design document is complete and software development is ready to begin.
Functional Requirements	NYISO has completed documentation of the functional requirements and the Business Owner has approved.
Software Design	The software design document is complete and software development is ready to begin.
Development Complete	Development has been completed, packaged and approved by the Supervisor.
Deployment	Required software changes to support commitment have been integrated into the production environment.
Study Complete	Scope of work to be performed has been completed; results and recommendations have been presented to the appropriate Business Owners and stakeholders.
Study Defined	The scope of work for the study has been presented to stakeholders, including a discussion on the necessary input(s), assumption(s) and objective(s) of the study.
Study Initiated	The objective(s) for the study has been developed with stakeholders; the primary consultant has been selected, if applicable; scope of work, including necessary inputs and/or initial assumptions has been discussed and defined; and a work plan outlining the schedule for completing the analysis and deliverables has been developed.

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Survey Participation

Sector	Sub Sector	Num. Eligible Organizations	Num. Reponses	Percent Participation
End Use Consumer	Gov. Sm. Cons. & Retail Aggr.	2	2	100%
"	Gov. State-wide Cons. Advocate	1	1	100%
"	Large Cons. Gov. Agency	1	0	0%
"	Large Consumer	5	5	100%
"	Small Consumer	7	7	100%
Generation Owner		17	5	29%
Other Supplier		37	20	54%
Public/Environment	Environmental	6	2	33%
"	Munis & Co-Ops	11	11	100%
"	State Power Authorities	2	2	100%
Transmission Owner		4	4	100%
Non Voting Entity		63	10	16%
Total		**156**	**69**	**44%**

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Survey Appeal Definition

Criteria	Criteria Weight	HIGH	MEDIUM	LOW	NONE
		10	7	3	0
Appeal	15	Broad Customer Support : Supported by 5 sectors with 25% or more of survey respondents per sector applying points and average across the survey respondents per sector of 5 points or more; or either raw or weighted scores equivalent to 20% of survey respondents applying 25 points or more	Moderate Customer Support: Supported by 4 sectors with 25% or more of survey respondents per sector applying points and average across the survey respondents per sector of 5 points or more; ; or either raw or weighted scores equivalent to 10% of survey respondents applying 25 points or more	Minimal Customer Support: Supported by 2 sectors with 25% or more of survey respondents per sector applying points and average across the survey respondents per sector of 5 points or more; : or either raw or weighted scores equivalent to 5% of survey respondents applying 25 points or more	Little to No Customer Support

Survey Appeal Score

* Stakeholder survey details posted with today's materials

Proposed Projects	Raw Score (Avg.)	Weighted Score	Sector Count	Appeal Score
CRM Integration with Chat	0.1	0.1	0.0	0
Mobile Functionality	0.8	1.2	0.0	0
Fuel Mix Data Query Enhancement	0.1	0.0	0.0	0
Treatment of Locality Imports (SOM)	0.7	1.4	0.0	3
Dynamic Capacity Zones (SOM)	0.7	0.8	0.0	0
Tailored Availability Metric	2.4	2.7	1.0	7
Competitive Entry Exemption for Increased CRIS	0.9	0.9	0.0	0
Enhanced BSM Mitigation Study Period	0.1	0.3	0.0	0
Review Capacity Physical Withholding Rules	0.4	0.4	0.0	0
BSM Repowering	3.7	3.1	1.0	7
EDR and UDR Enhancements	0.2	0.1	0.0	0
EDRs for External Transmission Upgrades	0.1	0.0	0.0	0
Explore Locational Reliability Pricing (SOM)	1.2	1.8	0.0	3
External Capacity Performance & Obligations	3.2	2.9	0.0	7
BSM to Address Other Price Suppression Actions (SOM)	0.6	1.1	0.0	0
Dynamic Setting of Import Rights Limits	2.7	2.3	1.0	7
Elimination of Capacity Localities	1.6	2.9	2.0	7
Creation and Elimination of Capacity Localities	1.7	1.3	0.0	3
Combined : Elimination with Creation and Elimination of Capacity Localities	3.3	4.2	2.0	7

	= 10, High Stakeholder Appeal
	= 7, Medium Stakeholder Appeal
	= 3, Low Stakeholder Appeal
	= 0, Little to None Stakeholder Appeal

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Survey Appeal Score

* Stakeholder survey details posted with today's materials

Proposed Projects	Raw Score (Avg.)	Weighted Score	Sector Count	Appeal Score
External CRIS Right Supply Failure Reset	0.4	0.3	0.0	0
Enhancing Fuel and Energy Security	5.2	6.0	4.0	10
Enabling Technologies for DER	5.0	4.5	2.0	7
RTC-RTD Convergence Improvements (SOM)	3.8	3.7	1.0	7
Review of RACT Compliance Plans (SOM)	0.4	0.3	0.0	0
5-minute Transaction Scheduling with HQ	0.9	0.9	0.0	0
Model 100+kV Transmission Constraints (SOM)	7.5	4.5	2.0	10
Constraint Specific Transmission Shortage Pricing (SOM)	3.9	3.7	2.0	7
Pricing Reserves for Congestion Management (SOM)	1.2	1.4	0.0	3
Carbon Pricing	25.2	24.5	5.0	10
Energy Market Software Performance	0.9	0.2	0.0	0
More Granular Operating Reserves (SOM)	5.4	6.0	3.0	10
Reserve Procurement for Resilience	1.6	1.4	0.0	3
Flexible Ramping Product	2.7	4.3	2.0	7
Ancillary Services Shortage Pricing (SOM)	6.0	6.0	4.0	10
Real-Time Performance Incentives	2.3	2.5	0.0	3
LPTs Redesign	0.3	0.5	0.0	0
E-Tagging Refresh and Performance Improvements	0.3	0.0	0.0	0
Climate Change Impact and Resilience Study	5.8	6.1	3.0	10

	= 10, High Stakeholder Appeal
	= 7, Medium Stakeholder Appeal
	= 3, Low Stakeholder Appeal
	= 0, Little to None Stakeholder Appeal

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Stakeholder Scoring Survey Comments

Project	Organization	Comment
Mobile Functionality - Text	Jamestown Board of Public Utilities	Virtual and DAM date selection causes the page to refresh and makes it unusable on mobile (would be helpful to make the other marketplace functions mobile friendly, general website less of a concern).
Fuel Mix Data Query Enhancement	Institute for Policy Integrity at NYU School of Law	We would like NYISO to explore making zonal fuel mix data also available.
Treatment of Locality Imports (SOM)	Helix Ravenswood, LLC	Incremental improvements to certain capacity markets should only be addressed once the more impactful price suppressive distortions are corrected.
"	New York Power Authority	NYPA supports the potential this project has to provide significant savings to consumers.
Dynamic Capacity Zones (SOM)	Helix Ravenswood, LLC	Incremental improvements to certain capacity markets should only be addressed once the more impactful price suppressive distortions are corrected.
"	Long Island Power Authority	Premature - pending outcome of Alt LCR case.
Tailored Availability Metric	NYS Department of State Utility Intervention Unit	The objective of this project should be to weight the EFORd calculation so that it emphasizes performance during times of system stress as measured, for example, by instances when there are reserve shortage prices. This project, combined with enhancements to reserve shortage pricing should improve incentives for RT performance.
"	Helix Ravenswood, LLC	Incremental improvements to certain capacity markets should only be addressed once the more impactful price suppressive distortions are corrected.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Competitive Entry Exemption for Increased CRIS	Helix Ravenswood, LLC	Incremental improvements to certain capacity markets should only be addressed once the more impactful price suppressive distortions are corrected.
"	New York Power Authority	NYPA supports this as a means to a more efficient wholesale market.
Enhanced BSM Mitigation Study Period	Helix Ravenswood, LLC	Incremental improvements to certain capacity markets should only be addressed once the more impactful price suppressive distortions are corrected.
Review Capacity Physical Withholding Rules	Helix Ravenswood, LLC	Incremental improvements to certain capacity markets should only be addressed once the more impactful price suppressive distortions are corrected.
BSM Repowering	NYS Department of State Utility Intervention Unit	The BSM rules should be revisited to ensure that economic repowering is not being improperly mitigated.
"	Helix Ravenswood, LLC	Incremental improvements to certain capacity markets should only be addressed once the more impactful price suppressive distortions are corrected.
EDR and UDR Enhancements	Helix Ravenswood, LLC	Incremental improvements to certain capacity markets should only be addressed once the more impactful price suppressive distortions are corrected.
EDRs for External Transmission Upgrades	Helix Ravenswood, LLC	Incremental improvements to certain capacity markets should only be addressed once the more impactful price suppressive distortions are corrected.
Explore Locational Reliability Pricing (SOM)	Helix Ravenswood, LLC	Differentiating the value of capacity resources is critical as the state transitions towards more intermittent and non-dispatchable resources.
"	Long Island Power Authority	Premature - pending outcome of Alt LCR case.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
External Capacity Performance & Obligations	NYS Department of State Utility Intervention Unit	As long as they are receiving the same compensation, external capacity resources must be required to perform to the same standards of internal resources.
"	Helix Ravenswood, LLC	Differentiating the value of capacity resources is critical as the state transitions towards more intermittent and non-dispatchable resources.
"	Long Island Power Authority	Ill conceived and uneconomic.
BSM to Address Other Price Suppression Actions (SOM)	Helix Ravenswood, LLC	This project would mitigate the price suppressive impacts of out-of-market payments that are threatening the competitive market and ensure reliability is maintained during the transition towards more intermittent resources that are not dispatchable.
Elimination of Capacity Localities	City of New York	The City continues to assert that this project should be pursued. However, because the need is not imminent, the City is allocating its points to projects more urgently needed in 2019. This project should be deferred and added to the 2020 project list.
"	Helix Ravenswood, LLC	This was previously addressed in the stakeholder process associated with creation and elimination but did not achieve the necessary support to be implemented. Additional resources should not be committed to this effort at this time.
"	Long Island Power Authority	Premature - pending outcome of Alt LCR case.
"	New York Power Authority	The asymmetric construct that has created an additional Capacity Locality, without the ability to eliminate that Locality, regardless of whether or not there continues to be a reliability or market need for the persistence of such locality, is an untenable burden on consumers, NYPA supports the ability to eliminate any new/additional Capacity Localities in the interests of New York consumers.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Creation and Elimination of Capacity Localities	Helix Ravenswood, LLC	This was previously addressed in the stakeholder process but did not achieve the necessary support to be implemented. Additional resources should not be committed to this effort at this time.
"	Long Island Power Authority	Premature - pending outcome of Alt LCR case.
External CRIS Right Supply Failure Reset	PSEG Energy Resource & Trade, LLC	Although we're not assigning points to this project, we feel this is a legitimate equity issue that needs to be addressed by the ISO.
"	New York Power Authority	NYPA supports this as a means to a more efficient wholesale market.
Enhancing Fuel and Energy Security	City of New York	The City has no objection to examining fuel security issues, but this is a very different study than the proposed climate change study.
"	NYS Department of State Utility Intervention Unit	This study should look at the issue of fuel delivery and security from an operation perspective. The study should examine under what, if any, conditions operations may find themselves without sufficient resources to meet daily operating requirements and identify possible mitigating actions.
"	Helix Ravenswood, LLC	Improving existing and creating new products and revenue opportunities for services that will support the electric system as the state transitions towards more intermittent and non-dispatchable resources is critical to reliability.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Enabling Technologies for DER	New York Power Authority	NYPA strongly supports the proliferation of new energy technologies, e.g. renewables, DER, ESR, etc., to foster reliability, resilience and efficient wholesale energy markets throughout New York State.
"	National Grid	National Grid appreciates the NYISO's efforts to integrate DER aggregations into wholesale markets. However, the NYISO's current plans for dual participation rules call for implementation in 2022. National Grid does not think this is appropriate because the NYISO's Energy Storage Resource project will be implemented in 2020. Given the NYSERDA/DPS Energy Storage Roadmap is calling for large amounts of energy storage to be quickly integrated into the grid, and many of these energy storage resources could benefit from simultaneously participation in wholesale and retail markets, National Grid believes that delaying dual participation rules until 2022 would reduce the value of these resources to customers. Therefore, National Grid believes that the NYISO should prioritize dual participation rules so they are ready when the Energy Storage Resource participation model is implemented.
RTC-RTD Convergence Improvements (SOM)	Long Island Power Authority	Remains a priority despite potential complexity of implementation. PAR treatment should be included prospectively. Dollar impact should be estimated.
"	New York Power Authority	NYPA supports the better alignment of RTC and RTD as a means to limit out of market actions to foster reliability, resilience and efficient wholesale energy markets throughout New York State. In order to maximize the impact of this better alignment, NYPA strongly encourages this project be expanded to include actions including par-controlled lines and any other actions that happen in real-time and not currently aligned/optimized in RTC/RTD.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
5-minute Transaction Scheduling with HQ	Long Island Power Authority	Need rule development now to address upcoming renewable additions.
Model 100+kV Transmission Constraints (SOM)	NYS Department of State Utility Intervention Unit	Understanding that there is no outstanding mitigation concern for the majority of the facilities and that this work will follow the completion of the Niagara modeling.
"	Saracen Energy East LP	Our expectation is that we are voting for modelling 100+kV transmission constraints above and beyond the list of 30 constraints that are scheduled to be included in the market in 2018. Given that 100+kV constraints was a top vote recipient for 2018, our expectation is that the current work scheduled for completion in 2018 will be completed in 2018 and not pushed into 2019 and 2020. If the ongoing 2018 project were included in this description, our vote would be 100 points for 100+kV Transmission Constraints.
Pricing Reserves for Congestion Management (SOM)	Helix Ravenswood, LLC	Improving existing and creating new products and revenue opportunities for services that will support the electric system as the state transitions towards more intermittent and non-dispatchable resources is critical to reliability.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Carbon Pricing	City of New York	The City continues to have concerns with the proposal but believes that the effort should continue to be examined. Implementation should not occur until the likely costs and benefits have been duly analyzed and considered. The City does not believe that it is necessary to expedite implementation and therefore supports the original 2022 implementation date (if the decision is made to proceed with this project). The benefits of this project are not sufficiently compelling to warrant deferring other meritorious projects.
"	NYS Department of State Utility Intervention Unit	Carbon pricing has potential to improve market outcomes. Score here, reflects UIU's contention that additional study of the concept and its impact on the market place and consumers has merit. Given the potential impact on the project plan, 2021 implementation is preferred.
"	Alcoa, Inc.	Carbon pricing should not be implemented, if at all, before 2022. Considerable work and analyses on carbon pricing remain before a determination of whether to proceed should be made.
"	IBM Corporation	Carbon pricing should not be implemented, if at all, prior to 2022. Considerable work and analyses on carbon pricing issues remain before a determination whether to proceed should be made.
"	Nucor Steel Auburn, Inc.	Carbon pricing likely will induce little emissions abatement in the electric supply sector until major transmission investments are installed. This project should be deferred until at least 2022 while other market price formation alternatives are evaluated.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Carbon Pricing	Occidental Chemical Corp.	Carbon pricing should not be implemented, if at all, prior to 2022. Considerable work and analyses on carbon pricing issues remain before a determination of whether to proceed should be made.
"	Wegmans Food Markets	Carbon pricing should not be implemented, if at all, prior to 2022. Considerable work and analyses on carbon pricing issues remain before a determination of whether to proceed should be made.
"	American Sugar Refining	Preferred implementation date no earlier than 2021.
"	Association for Energy Affordability	Prefer an implementation date of 2020.
"	Beth Israel Health Care System	Implementation should be no sooner than 2021.
"	Fordham University	For implementation no sooner than 2021.
"	Memorial Sloan Kettering Cancer Center	For implementation no sooner than 2021.
"	Mount Sinai Medical Center	For implementation no sooner than 2021.
"	New York University	For implementation no sooner than 2021.
"	CPV Valley, LLC	2020 implementation. Preferably January 2020.
"	East Coast Power, LLC	2020
"	Empire Generating Co, LLC	2020 Please, or 2019 if you can.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Carbon Pricing	Helix Ravenswood, LLC	Carbon pricing is an important initiative. However, it is not the "silver bullet" solution. Accelerating its schedule at the expense of other market improvements will not support resilience or competitive markets. Moreover, a flawed implementation would harm resilience and competitive markets. Therefore, it is more important to implement it in a manner that works. Implementation in 2022 is not a problem as long as it is clear to market participants; i) the path and timeline it is taking, ii) how it will be transitioned, and iii) that rates are going to be reasonable (e.g., no double payments and no price suppression). Clear signals related to these and other issues as the process moves forward are more important than implementation in 2020 or 2021.
"	Saracen Energy East LP	2020 implementation. Preferably January 2020.
"	Constellation NewEnergy, Inc.	To address the important issue of climate change, New York State's State Energy Plan established ambitious clean energy goals, including reducing CO2 emissions 40 percent by 2030. To achieve this goal, New York State has established several initiatives, including a Clean Energy Standard ("CES") with an aggressive goal of 50 percent of electricity from renewable resources by 2030, as well as energy efficiency programs, the Reforming the Energy Vision (REV) strategy and participation in the Regional Greenhouse Gas Initiative ("RGGI"). To that end, a meaningful carbon price in NYISO's energy market is the next step to properly valuing generators' environmental attributes and achieving New York State's carbon reduction goals. Exelon commends the NYISO for undertaking this nation-leading effort. Exelon recommends NYISO implements the "carbon pricing" initiative as soon as practicable. If the program can be implemented well by 2020, we see no reason to delay this important initiative.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Carbon Pricing	Lyonsdale Biomass, LLC	2020 implementation. Preferably January 2020.
"	BP Energy Company	BP Energy Company (BPEC) has submitted a preference in the non-binding poll for a 2021 implementation date for the addition of a carbon price for power traded in the NYISO market. BPEC respectfully notes that continued support of this preference is subject to a more clearly defined carbon policy proposal that is currently in development by the NYISO stakeholder process. BPEC's preference should not be deemed to be an endorsement of any specific plan at this point.
"	DC Energy LLC	We are concerned with the leaking of emissions to nearby ISOs as a result of the current proposal. Our preference re: timeline is for 2021 to allow more time for a potential regional solution as well as allow participants to adjust to new LBMP pricing regime that would affect TCC positions bought and sold in the multi-year auction.
"	Direct Energy Business Marketing, LLC	We believe NYISO's original proposed timeline of 2022 implementation gives loads much better lead time to prepare for this than 2021 or 2020. We also ask that NYISO continue to study and publish indicative market outcomes that will result from implementation of carbon pricing so loads can prepare for the market impact.
"	Eastern Generation	2020

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Carbon Pricing	Exelon Generation Company LLC	To address the important issue of climate change, New York State's State Energy Plan established ambitious clean energy goals, including reducing CO2 emissions 40 percent by 2030. To achieve this goal, New York State has established several initiatives, including a Clean Energy Standard ("CES") with an aggressive goal of 50 percent of electricity from renewable resources by 2030, as well as energy efficiency programs, the Reforming the Energy Vision (REV) strategy and participation in the Regional Greenhouse Gas Initiative ("RGGI"). To that end, a meaningful carbon price in NYISO's energy market is the next step to properly valuing generators' environmental attributes and achieving New York State's carbon reduction goals. Exelon commends the NYISO for undertaking this nation-leading effort. Exelon recommends NYISO implements the "carbon pricing" initiative as soon as practicable. If the program can be implemented well by 2020, we see no reason to delay this important initiative.
"	HQ Energy Services (US)	HQUS allocates points to the Carbon Pricing effort only to the extent that Carbon Pricing is developed in a source-specific way, reasonably reflecting imports' underlying emissions, and not assessing an artificial, NY-based, emissions rate to import transactions (see "HQUS Comments on Draft Straw Proposal" posted with the 06/18/18 IPPTF meeting materials).

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Carbon Pricing	Morgan Stanley Capital Group, Inc.	Uncertainty around potential carbon implementation poses a considerable threat to forward market liquidity and may undermine the proper functioning of markets. While any change in the regulatory landscape bears risk, the danger in this case is particularly acute given: (1) the tight regulatory timeline necessary to implement by 2021; (2) the final NYISO vote will not happen prior to the middle of 2019, following which FERC will make a decision on the proposed NYISO tariff in late 2019 or potentially 2020; (3) markets will be paralyzed from now until FERC makes this decision due to the magnitude of the impact on prices, which dwarfs other market fundamentals; (4) considerable open interest currently exists in the 2020 and 2021 New York power markets, but has stalled since the announcement of the Straw Proposal; and (5) market participants will need to use forwards to hedge exposures from now until the ultimate decision is made. Establishing a public "date certain" after which carbon pricing would be implemented will mitigate much of the forward market impact, and would affirm the sanctity of the NYISO administered electricity markets. Choosing a "date certain" far enough forward is important to give the market flexibility to absorb slow-downs in any part of the implementation process. In other words, given the history of carbon regulation in other regions (e.g. delays related to litigation and political opposition), choosing a "date certain" too early in the timeline will be automatically discounted by the market, and undermine its value. If the market discounts the "date certain", liquidity and markets will remain non-functional. Given current open interest and procurement schedules, we believe a "date certain" in 2022 would unfreeze forward markets for 2020 and 2021 and will allow the market to hedge current exposures during the course of the regulatory and decision making process, while not unduly prolonging implementation. Experience suggests that certainty is more valuable to markets than speed, and continued forward market liquidity and stability enhances the likelihood of eventual success. A "date certain" in 2020 bears significant risk in that the date could be moved back. In the interim, forward 2020 trading would suffer dramatically. While a 2021 "date certain" holds lower risk, uncertainty around FERC's process remains, especially if opposing parties successfully mount viable legal challenges. Given these risks, a "date certain" in 2022 in accordance with the original proposal would be the most favorable and would give the market the opportunity to hedge for 2020 and 2021. Absent a "date certain" approach, participation in affected markets becomes increasingly risky and may chill the willingness to transact.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Carbon Pricing	PSEG Energy Resource & Trade, LLC	In our view, this is the most important project the ISO should be working on in 2019 and thereafter.
"	Vitol Inc.	Implementation in 2020
"	American Wind Energy Association	Preference for 2020 implementation.
"	Freeport Electric	2021 implementation is preferred.
"	Village of Arcade	2022 is acceptable.
"	Village of Fairport	We support 2022 implementation.
"	Village of Rockville Centre	2021 implementation is preferred.
"	Long Island Power Authority	Need more study and quantification of broader alternatives (i.e. due diligence) for this multibillion dollar market redesign. Should not rush to vote/implement at the expense of a sounder market design.
"	New York Power Authority	NYPA supports the inclusion of Carbon Pricing in wholesale electric markets in order to foster the proliferation of new energy technologies, e.g. renewables, DER, ESR, etc., to the advantage of reliability, resilience and efficient wholesale energy markets throughout New York State.
"	Consolidated Edison Co. of New York, Inc.	Based on the tradeoffs described by the NYISO, Con Edison would prefer a 2021 implementation of carbon pricing.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Carbon Pricing	National Grid	National Grid remains supportive of the NYISO/DPS effort in the IPPTF to incorporate the price of carbon into the wholesale energy markets. However, National Grid agrees with the NYISO that there are other projects that should take higher priority than the carbon pricing. In its Master Plan proposal, the NYISO has noted that carbon pricing could be prioritized for an implementation sooner than the 2022 date originally envisioned but that would require delaying implementation of certain other projects that it believes are more important. National Grid agrees with the NYISO's Master Plan that these projects should not be delayed and that carbon pricing should remain in line for a 2022 implementation.
"	New York State Electric & Gas Corp.	We agree with the NYISO's Master Plan recommended timeline for the deployment of Carbon Pricing - 2022.
More Granular Operating Reserves (SOM)	City of New York	In particular, the City supports the aspect of this project pertaining to establishing consequences for not adhering to the NYISO's directives.
"	NYS Department of State Utility Intervention Unit	This project seems logically connected to "pricing reserves for congestion management" from a market design and impact system performance.
"	Helix Ravenswood, LLC	Improving existing and creating new products and revenue opportunities for services that will support the electric system as the state transitions towards more intermittent and non-dispatchable resources is critical to reliability.
"	Direct Energy Business Marketing, LLC	We ask that NYISO study and publish indicative market outcomes that will result from implementation of more granular operating reserves as soon as possible so loads can prepare for the market impact.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
More Granular Operating Reserves (SOM)	Morgan Stanley Capital Group, Inc.	We believe that the reserve projects including NYISO's Ancillary Shortage Pricing, More Granular Operating Reserves and Reserve Procurement for Resilience are vital to maintaining reliability as more intermittent renewable generation competes in NYISO's electricity market. These reserve projects are very important to incentivizing the fast-ramping, flexible generation necessary for grid health. If carbon is deployed without first implementing the correct reserve price incentive, this fast-ramping generation may be unable to compete and, thus, could be forced to make a retirement decision leading to out-of-market Reliability Must Run contracts. Additionally, neighboring ISOs, including PJM and ISO-NE, have implemented (or are currently implementing) price formation capacity and energy products that may limit vital imports available to New York when the grid is stressed. In short, an ISO that is dealing with a large influx of intermittent renewables needs to incentivize more fast-ramping reserves to maintain reliability. These three products provide an important price signal in the market to do just this.
"	New York Power Authority	NYPA strongly supports the more granular visibility, valuing and dispatch of operating reserves in critical load pockets in NY. We believe this project will foster reliability, resilience and efficient wholesale energy markets throughout New York State.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Reserve Procurement for Resilience	NYS Department of State Utility Intervention Unit	"Resiliency reserves" are not defined. It is not clear what incremental service is being procured or what cost - if any - there would be to supply it.
"	Helix Ravenswood, LLC	Improving existing and creating new products and revenue opportunities for services that will support the electric system as the state transitions towards more intermittent and non-dispatchable resources is critical to reliability.
"	Morgan Stanley Capital Group, Inc.	We believe that the reserve projects including NYISO's Ancillary Shortage Pricing, More Granular Operating Reserves and Reserve Procurement for Resilience are vital to maintaining reliability as more intermittent renewable generation competes in NYISO's electricity market. These reserve projects are very important to incentivizing the fast-ramping, flexible generation necessary for grid health. If carbon is deployed without first implementing the correct reserve price incentive, this fast-ramping generation may be unable to compete and, thus, could be forced to make a retirement decision leading to out-of-market Reliability Must Run contracts. Additionally, neighboring ISOs, including PJM and ISO-NE, have implemented (or are currently implementing) price formation capacity and energy products that may limit vital imports available to New York when the grid is stressed. In short, an ISO that is dealing with a large influx of intermittent renewables needs to incentivize more fast-ramping reserves to maintain reliability. These three products provide an important price signal in the market to do just this.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Flexible Ramping Product	Helix Ravenswood, LLC	Improving existing and creating new products and revenue opportunities for services that will support the electric system as the state transitions towards more intermittent and non-dispatchable resources is critical to reliability.
"	Long Island Power Authority	Important to move forward immediately given pending procurements.
"	New York Power Authority	NYPA strongly supports the proliferation of new energy technologies, e.g. renewables, DER, ESR, etc., to foster reliability, resilience and efficient wholesale energy markets throughout New York State.
Ancillary Services Shortage Pricing (SOM)	NYS Department of State Utility Intervention Unit	This project would seem to improve RT incentives and would complement the enhancements to EFORd contemplated in the "tailored availability metric" work
"	Helix Ravenswood, LLC	Improving existing and creating new products and revenue opportunities for services that will support the electric system as the state transitions towards more intermittent and non-dispatchable resources is critical to reliability.
"	Direct Energy Business Marketing, LLC	We ask that NYISO study and publish indicative market outcomes that will result from implementation of ancillary services shortage pricing changes as soon as possible so loads can prepare for the market impact.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Ancillary Services Shortage Pricing (SOM)	Morgan Stanley Capital Group, Inc.	We believe that the reserve projects including NYISO's Ancillary Shortage Pricing, More Granular Operating Reserves and Reserve Procurement for Resilience are vital to maintaining reliability as more intermittent renewable generation competes in NYISO's electricity market. These reserve projects are very important to incentivizing the fast-ramping, flexible generation necessary for grid health. If carbon is deployed without first implementing the correct reserve price incentive, this fast-ramping generation may be unable to compete and, thus, could be forced to make a retirement decision leading to out-of-market Reliability Must Run contracts. Additionally, neighboring ISOs, including PJM and ISO-NE, have implemented (or are currently implementing) price formation capacity and energy products that may limit vital imports available to New York when the grid is stressed. In short, an ISO that is dealing with a large influx of intermittent renewables needs to incentivize more fast-ramping reserves to maintain reliability. These three products provide an important price signal in the market to do just this.
"	New York Power Authority	NYPA strongly supports the proliferation of new energy technologies, e.g. renewables, DER, ESR, etc., to foster reliability, resilience and efficient wholesale energy markets throughout New York State.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
Climate Change Impact and Resilience Study	City of New York	The City strongly believes that it is imperative for the NYISO to expand its planning efforts to consider climate change. As Brad Jones recently stated, planning for future system needs is a critical function of the NYISO, and climate change is an important consideration in determining future system needs.
"	Helix Ravenswood, LLC	Resilience is an important issue. However, dedicating significant amounts of NYISO resources towards an effort addressing studies associated with competitive market design concepts for 2030-2050 while diverting resources from important near-term resilience products and services could be counterproductive. It would make more sense for others to perform an initial study with some input from the NYISO as opposed to the NYISO taking the lead. Many other resilience projects are underway and require the full attention of the NYISO.
"	Long Island Power Authority	Need threshold discussion of who is receiving and who pays for resilience services. Also, upcoming DEC NOx rules should be considered.
"	New York Power Authority	NYPA supports studying of the New York electric infrastructure to maintain reliability, increase resilience through efficient wholesale energy market mechanisms that appropriately values and fosters development of such attributes throughout New York State.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
General Survey Comments	Boston Energy Trading and Marketing LLC	I would like the NYISO to consider this as a 2018/2019 minor enhancement to the Summary of Transmission Contracts report on the public TCC market site. I would like to request the NYISO add which auction the TCC was cleared in to the summary of transmission contracts report. We use this report to verify our positions and track the market. With the Balance of Period auctions it has become extremely difficult to verify our contracts or track the market without knowing which auction the contract was awarded. Responding to the NYISO semi-annual request for TCC contract verification is also becoming burdensome due to the challenge of identify which round a given contract was awarded. NYISO already provides this information in the TCC Application itself, when you do a search on round. See screen shot below from the TCC application. The Round column is what we would like added to the TCC public summary report. To avoid impacting market participants systems I would have no problem if you just added the column to the end of the report.
"	Richard P. Felak	It is unclear if this is already included in one or more of the NYISO's items above but in any case substantive efforts should be expended on improving the granularity of all market inputs and outputs so that eventually in the limit every power producer (including all DERs) and end use consumers (including at the retail level) will have their own individual pricing signal(s) for use to decide if and when to most economically sell or buy power.

Stakeholder Scoring Survey Comments

Project	Organization	Comment
General Survey Comments	Brookfield Energy Marketing LP	Brookfield also supports the NYISO's recommendation to study Enhancing Fuel and Energy Security. Generally speaking, Brookfield believes that the NYISO should consistently evaluate its current planning studies and market products to ensure the grid remains reliable and resilient, and preserving fuel diversity is a key component contributing to those goals. However, because there are a few projects with more urgent and impactful implications for Brookfield, we felt compelled to allocate our points to those projects only.
"	Shell Energy North America (US), L.P.	Carbon Pricing should be in place in 2020.
"	Jamestown Board of Public Utilities	The ability for marketplace calendars to be downloaded and/or sync'd with outlook would be helpful.
"	New York Power Authority	NYPA supports a review of best practices of other ISO/RTOs in order to make the annual project prioritization process more inclusive and responsive to stakeholder priorities and with a vision to making the process more dynamic as stakeholders desire.
"	National Grid	Comments on Ancillary Services projects: National Grid supports the NYISO's view in its Master Plan that certain ancillary services projects should be prioritized to enhance price formation and address high penetrations of variable renewable resources. National Grid believes the NYISO should prioritize those projects that will be most effective in making the wholesale markets efficient and bringing out-of-market value into wholesale markets. National Grid did it's best to predict which Ancillary Services projects would be the most effective and voted accordingly, but additional analysis is needed for stakeholders to prioritize going forward. As such, the first step should be for the NYISO to do an analysis identifying which projects would have the greatest impact on price formation and integrating value that is currently unrecognized in the wholesale markets into the wholesale markets.

Project Description Changes

- ~~**Network Attached Storage (NAS) Replacement – 2019**~~*

  ~~This a multi-year effort to upgrade the NYISO's Network Storage Platform. This technology lifecycle project is necessary to ensure the ongoing performance, stability, availability of security patches and vendor support for critical systems.~~

* The NYISO has determined this work does not need to be completed in 2019 such that the project is being removed from consideration.

Project Prioritization Criteria

* NYISO scoring details posted with today's materials

PRIORITIZATION CRITERIA						
Category	Criteria	Criteria Weight	HIGH	MEDIUM	LOW	NONE
			10	7	3	0
Strategy (If we do this project)	Leader in Reliability	10	Significantly improves NYISO ability to maintain NYCA Reliability	Moderately improves NYISO ability to maintain NYCA Reliability	Minimally improves NYISO ability to maintain NYCA Reliability	None
	Leader in Market Design	10	Significantly improves NYISO Market Design	Moderately improves NYISO Market Design	Minimally improves NYISO Market Design	None
	Leader in Technology Innovation	6	Significantly advances the IT strategy or technology improvement	Moderately advances the IT strategy or technology improvement	Minimally advances the IT strategy or technology improvement	None
	Sustain and Enhance Robust Planning Processes	9	Supports tariff, FERC, NPCC, or NYSERC compliance requirements for Planning Process	Supports reliability planning and/or Business Plan objectives	Required for SRP planning study efficiency or continuous improvement initiatives	None
Outcome (If we do this project)	NYISO Annual Cost Reduction	10	>$500k savings-Direct and soft (labor)	>$100k, <$500k savings-Direct and soft (labor)	>$10k,<$100k savings - Direct and soft (labor)	<$10k savings - Direct and soft (labor)
	Appeal	15	Broad Customer Support : Supported by 5 sectors with 25% or more of survey respondents per sector applying points and average across the survey respondents per sector of 5 points or more; or either raw or weighted scores equivalent to 20% of survey respondents applying 25 points or more	Moderate Customer Support: Supported by 4 sectors with 25% or more of survey respondents per sector applying points and average across the survey respondents per sector of 5 points or more; ; or either raw or weighted scores equivalent to 10% of survey respondents applying 25 points or more	Minimal Customer Support: Supported by 2 sectors with 25% or more of survey respondents per sector applying points and average across the survey respondents per sector of 5 points or more; : or either raw or weighted scores equivalent to 5% of survey respondents applying 25 points or more	Little to No Customer Support
	Market Efficiency	10	Significant improvement	Moderate improvement	Minimal improvement	No impact
	Post Production Sustainability	5	Existing support structure and skills	Support structure exists but needs minimal modifications	Support structure exists but needs major modifications	No skills or support structure in place
Risk (If we do NOT do this project)	Compliance	10	Significant risk of compliance violation	Moderate risk of compliance violation	Minimal risk of compliance violation	None
	Business Process (inclusive of technology impact on business process)	5	Enterprise Wide and/or Bid to Bill Impact. The project impacts processes in most departments	Multiple Department Impact.	Department Wide Impact The project impacts many processes within a department	Only one or two processes impacted
	Reliability and Market	10	Mission-critical systems becoming non operational or above $1 million market impact	Non mission-critical systems becoming non operational or $100,000 - $1 million market impact	Non mission-critical systems affected or $10,000 - $100,000 market impact	No or less than 10,000 impact
Execution (If we do this project)	Cost	4	Total project cost (current & future years) estimated <$100k	Total project cost (current & future years) estimated >$100k, <$500k	Total project cost (current & future years) estimated >$500, <$1M	Total project cost (current & future years) estimated >$1M
	Multi-Year Dependency	8	Continuation of a multi-year project - postponement significantly disrupts value of previous investments	Continuation of a multi-year project - postponement moderately disrupts value of previous investments	Continuation of a multi-year project - postponement minimally disrupts value of previous investments	None
	Complexity of Business and Technology	4	One area/technology	Cross-functional < 3 Areas/Technology	Highly Cross-functional/ Re-engineering	Complex, solution and impact unknown
	Compliance	8	Non-appealable, ordered by FERC / desired by NYISO and MP	Ordered by FERC, undesired by NYISO or MP	Potential order identified by FERC	No order identified by FERC

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Project Priority Scores and Estimated Costs

Product Area	Project Name	Code	Stakeholder Appeal	NYISO Score	Proposed Deliverable	Estimated Cost (in millions)			
						Labor	Capital	Prof. Serv.	Total
Business and Finance Products	CRM Integration with Chat		0	198	Deployment	0.15	0.03	0.15	0.33
Business and Finance Products	Mobile Functionality		0	101	Deployment	0.11	0.00	0.20	0.31
Business and Finance Products	Enterprise Information Management - Data Integration Phase IV	Continuing			Deployment	0.76	0.30	5.06	6.12
Business and Finance Products	Fuel Mix Data Query Enhancement		0	115	Deployment	0.08	0.00	0.01	0.09
Business and Finance Products	Transactions Modifications and Confirmation Tool			246	Functional Requirements	0.11	0.00	0.00	0.11
Business and Finance Products	Metering Submission and Access Redesign			174	Deployment	0.20	0.00	0.00	0.20
Business and Finance Products	Rate Schedule 12 Settlement	Continuing			Deployment	0.39	0.00	0.10	0.49
Business and Finance Products	S&P Credit Ratings Platform Change	Mandatory			Deployment	0.10	0.00	0.00	0.10

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Project Priority Scores and Estimated Costs

						Estimated Cost (in millions)			
Product Area	**Project Name**	**Code**	**Stakeholder Appeal**	**NYISO Score**	**Proposed Deliverable**	**Labor**	**Capital**	**Prof. Serv.**	**Total**
Business and Finance Products	Financial Risk Assessment and Scoring Enhancement			345	Functional Requirements	0.08	0.00	0.00	0.08
Business and Finance Products	Oracle Financials Upgrade			257	Architectural Design	0.09	0.00	0.05	0.14
Business and Finance Products	FERC Form1 Redesign			253	Deployment	0.07	0.04	0.00	0.11
Business and Finance Products	Vendor Management Tool	Continuing			Software Design	0.18	0.10	0.08	0.36
Business and Finance Products	Position Control System			229	Software Design	0.09	0.01	0.05	0.15
Business and Finance Products	Finance Systems Strategic Vision Planning			283	Study Complete	0.11	0.00	0.00	0.11
Capacity Market Products	ICAP AMS Redesign Phase III	Continuing			Deployment	0.38	0.00	0.09	0.47
Capacity Market Products	CRIS for External - ROS Transmission Investments	Mandatory			Deployment	0.21	0.00	0.00	0.21

Project Priority Scores and Estimated Costs

Product Area	Project Name	Code	Stakeholder Appeal	NYISO Score	Proposed Deliverable	Estimated Cost (in millions)			
						Labor	Capital	Prof. Serv.	Total
Capacity Market Products	Treatment of Locality Imports (SOM)		3	217	Market Design Concept Proposed	0.12	0.00	0.20	0.32
Capacity Market Products	Dynamic Creation of Zones (SOM)		0	197	Market Design Concept Proposed	0.16	0.00	0.08	0.24
Capacity Market Products	Tailored Availability Metric		7	333	Market Design Concept Proposed	0.14	0.00	0.05	0.19
Capacity Market Products	Competitive Entry Exemption for Increased CRIS		0	386	Market Design Complete	0.05	0.00	0.00	0.05
Capacity Market Products	Enhanced BSM Mitigation Study Period		0	209	Market Design Concept Proposed	0.05	0.00	0.00	0.05
Capacity Market Products	Review Capacity Physical Withholding Rules		0	130	Market Design Concept Proposed	0.05	0.00	0.00	0.05

Project Priority Scores and Estimated Costs

Product Area	Project Name	Code	Stakeholder Appeal	NYISO Score	Proposed Deliverable	Estimated Cost (in millions)			
						Labor	Capital	Prof. Serv.	Total
Capacity Market Products	Capacity Transfer Rights for Internal Transmission Upgrades (SOM)	Future							
Capacity Market Products	Economically Allocate Import Rights	Future							
Capacity Market Products	BSM Repowering		7	286	Market Design Complete	0.05	0.00	0.00	0.05
Capacity Market Products	EDR and UDR Enhancements		0	220	Market Design Concept Proposed	0.10	0.00	0.06	0.16
Capacity Market Products	EDRs for External Transmission Investment		0	156	Market Design Concept Proposed	0.09	0.00	0.05	0.13
Capacity Market Products	Explore Alternate LCR - Reliability Impact (SOM)		3	172	Study Complete	0.09	0.00	0.20	0.29
Capacity Market Products	External Capacity Performance & Obligations		7	326	Market Design Complete	0.09	0.00	0.00	0.09

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Project Priority Scores and Estimated Costs

						Estimated Cost (in millions)			
Product Area	**Project Name**	**Code**	**Stakeholder Appeal**	**NYISO Score**	**Proposed Deliverable**	**Labor**	**Capital**	**Prof. Serv.**	**Total**
Capacity Market Products	Demand Curve Reset	Mandatory			Study Defined	0.26	0.00	0.60	0.86
Capacity Market Products	BSM to Address Other Price Suppression Actions (SOM)		0	127	Market Design Concept Proposed	0.09	0.00	0.00	0.09
Capacity Market Products	Dynamic Setting of Import Rights Limits		7	204	Market Design Concept Proposed	0.07	0.00	0.06	0.13
Capacity Market Products	Elimination of Capacity Localities		7	207	Study Complete	0.09	0.00	0.30	0.39
Capacity Market Products	Creation and Elimination of Capacity Localities		3	257	Study Complete	0.10	0.00	0.30	0.40
Capacity Market Products	External CRIS Right Supply Failure Reset		0	145	Market Design Complete	0.04	0.00	0.00	0.04
Capacity Market Products	Enhancing Fuel and Energy Security		10	474	Study Complete	0.05	0.00	0.60	0.65

Project Priority Scores and Estimated Costs

						Estimated Cost (in millions)			
Product Area	**Project Name**	**Code**	**Stakeholder Appeal**	**NYISO Score**	**Proposed Deliverable**	**Labor**	**Capital**	**Prof. Serv.**	**Total**
DER Products	DER Participation Model	Mandatory			Functional Requirements	0.72	0.00	0.25	0.97
DER Products	Enabling Technologies for DER		7	280	Study Complete	0.15	0.00	0.00	0.15
DER Products	NYISO Pilot Framework	Continuing			Study Complete	0.21	0.00	0.10	0.31
Energy Market Products	ESR Participation Model (SOM)	Mandatory			Deployment	2.74	0.00	4.82	7.56
Energy Market Products	Long Island PAR Optimization & Financial Rights (SOM)	Future							
Energy Market Products	RTC-RTD Convergence Improvements (SOM)		7	204	Market Design Complete	0.13	0.00	0.18	0.31
Energy Market Products	Enhanced PAR Modeling (SOM)	Future							
Energy Market Products	Review of RACT Compliance Plans (SOM)		0	184	Market Design Concept Proposed	0.07	0.00	0.15	0.22
Energy Market Products	Performance-based Reserve Payments (SOM)	Future							

Project Priority Scores and Estimated Costs

Product Area	Project Name	Code	Stakeholder Appeal	NYISO Score	Proposed Deliverable	Estimated Cost (in millions)			
						Labor	Capital	Prof. Serv.	Total
Energy Market Products	5 minute Transaction Scheduling with HQ		0	197	Market Design Concept Proposed	0.12	0.00	0.07	0.18
Energy Market Products	Model 100+kV Transmission Constraints (SOM)		10	349	Functional Requirements	0.15	0.00	0.00	0.15
Energy Market Products	Dynamic Reserve Requirements (SOM)	Future							
Energy Market Products	Constraint Specific Transmission Shortage Pricing (SOM)		7	462	Market Design Complete	0.21	0.00	0.08	0.29
Energy Market Products	Eliminate Fees for CTS Transactions with PJM (SOM)	Future							
Energy Market Products	Enhanced Fast Start Pricing	Mandatory			Functional Requirements	0.24	0.00	0.08	0.32
Energy Market Products	Pricing Reserves for Congestion Management (SOM)*		3	212	Study Complete				
Energy Market Products	Carbon Pricing		10	492	Market Design Complete	0.38	0.00	0.68	1.06

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Project Priority Scores and Estimated Costs

						Estimated Cost (in millions)			
Product Area	**Project Name**	**Code**	**Stakeholder Appeal**	**NYISO Score**	**Proposed Deliverable**	**Labor**	**Capital**	**Prof. Serv.**	**Total**
Energy Market Products	Energy Market Software Performance		0	151	Study Complete	0.09	0.00	0.35	0.44
Energy Market Products	More Granular Operating Reserves (SOM)		10	520	Market Design Complete	0.15	0.00	0.07	0.22
Energy Market Products	Reserve Procurement for Resilience		3	293	Market Design Complete	0.13	0.00	0.13	0.26
Energy Market Products	Flexible Ramping Product		7	220	Study Complete	0.15	0.00	0.09	0.24
Energy Market Products	Ancillary Services Shortage Pricing (SOM)		10	480	Study Complete	0.13	0.00	0.06	0.19
Energy Market Products	Real-Time Performance Incentives		3	225	Market Design Complete	0.14	0.00	0.03	0.16
Energy Market Products	DAM Congestion Settlement Re-Allocation Automation			138	Development Complete	0.11	0.00	0.00	0.11
Energy Market Products	LPT's Redesign		0	210	Market Design Concept Proposed	0.08	0.00	0.00	0.08

Project Priority Scores and Estimated Costs

Product Area	Project Name	Code	Stakeholder Appeal	NYISO Score	Proposed Deliverable	Estimated Cost (in millions)			
						Labor	Capital	Prof. Serv.	Total
Energy Market Products	Automated Default Mitigation Implementation			356	Software Design	0.08	0.00	0.03	0.10
Enterprise Products	Database Platform Upgrade -2019	Continuing			Deployment	0.24	0.10	0.00	0.34
Enterprise Products	Application Platform Upgrade Phase - 2019	Continuing			Deployment	0.54	0.00	0.00	0.54
Enterprise Products	Identity and Access Management (IAM) - 2019	Continuing			Deployment	0.34	0.20	0.20	0.74
Enterprise Products	Microsoft Systems Upgrade	Continuing			Deployment	0.47	1.04	0.10	1.61
Enterprise Products	Network Infrastructure Upgrade	Continuing			Deployment	0.37	3.18	0.06	3.62
Enterprise Products	IT Service Management Improvements			341	Functional Requirements	0.18	0.00	0.25	0.43
Enterprise Products	IT Infrastructure Automation			253	Deployment	0.26	0.20	0.23	0.69
Operations & Reliability Products	EMS/BMS System Upgrade	Continuing			Deployment	3.02	0.00	1.60	4.62

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Project Priority Scores and Estimated Costs

						Estimated Cost (in millions)			
Product Area	**Project Name**	**Code**	**Stakeholder Appeal**	**NYISO Score**	**Proposed Deliverable**	**Labor**	**Capital**	**Prof. Serv.**	**Total**
Operations & Reliability Products	- PI System Upgrade	Continuing			Deployment	0.08	0.00	0.00	0.08
Operations & Reliability Products	- EMS/BMS Workstation Upgrade	Continuing			Deployment	0.13	0.00	0.00	0.13
Operations & Reliability Products	Gurobi (MIP) Refresh	Continuing			Deployment	0.18	0.00	0.00	0.18
Operations & Reliability Products	TOA Platform Upgrade Phase III	Continuing			Development Complete	0.44	0.00	0.49	0.92
Operations & Reliability Products	E-Tagging Refresh & Performance Improvements		0	107	Software Design	0.10	0.00	0.50	0.60
Planning Products	Interconnection Project Queue (or Portal) Automation	Continuing			Deployment	0.10	0.00	0.20	0.30
Planning Products	Comprehensive System Planning Process Review	Continuing			Market Design Complete	0.14	0.00	0.05	0.19
Planning Products	Deliverability Base Case Automation			377	Deployment	0.08	0.25	0.00	0.33
Planning Products	Climate Change Impact and Resilience Study		10	237	Study Initiated	0.25	0.00	0.60	0.85

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Project Prioritization Cost by Product Area

	Estimated Cost (in millions)			
Product Area	Labor	Capital	Prof. Serv.	Total
Business and Finance Products	2.52	0.47	5.70	8.68
Capacity Market Products	2.28	0.00	2.58	4.86
DER Products	1.08	0.00	0.35	1.43
Energy Market Products	5.10	0.00	6.80	11.90
Enterprise Products	2.41	4.72	0.84	7.97
Operations & Reliability Products w/o EMS/BMS System Upgrade	0.93	0.00	0.99	1.92
Planning Products	0.57	0.25	0.85	1.67
Total Project Cost w/o EMS/BMS	14.88	5.44	18.10	38.42
EMS/BMS System Upgrade	3.02	0.00	1.60	4.62
Total Project Cost with EMS/BMS	17.90	5.44	19.70	43.04

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Historic Project Budget Comparison

Project Budget Including EMS/BMS Upgrade	Estimated Cost (in millions) Labor	Capital	Prof. Serv.	Total	Mandatory	Continuing
2018 Approved	15.55	8.56	8.38	32.49	2.15	17.68
2017 Approved	15.43	7.38	13.51	36.31	1.01	23.55
2016 Approved	13.79	8.02	6.56	28.37	4.17	18.83
2015 Approved	11.81	5.29	7.26	24.38	5.67	NA
Project Budget Less EMS/BMS Upgrade	**Labor**	**Capital**	**Prof. Serv.**	**Total**	**Mandatory**	**Continuing**
2018 Approved	11.01	7.96	4.64	23.61	2.15	8.80
2017 Approved	11.10	6.18	4.59	21.87	1.01	9.10
2016 Approved	11.50	6.32	3.78	21.60	4.17	12.06
2015 Approved	11.63	5.29	5.63	22.55	5.67	NA

Next Steps

- Review an initial project budget recommendation at the July 25th BPWG meeting
- Review a revised project budget recommendation at the August 17th BPWG meeting
- Review the initial NYISO budget at the September 7th BPWG meeting

Questions?

NEW YORK INDEPENDENT SYSTEM OPERATOR

The Mission of the New York Independent System Operator is to:

- Serve the public interest and
- Provide benefit to stakeholders by
  - Maintaining and enhancing regional reliability
  - Operating open, fair and competitive wholesale electricity markets
  - Planning the power system for the future
  - Providing factual information to policy makers, stakeholders and investors in the power system

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