2018 Project Prioritization and Budgeting Process

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Agenda

- Background
- 2018 Project Prioritization Process
- Project Prioritization Timeline
- Stakeholder Scoring Survey
- 2018 Project Candidate Changes
- Milestone Definitions
- 2018 Project Costs/Benefits
- 2018 Project Dependencies
- Next Steps

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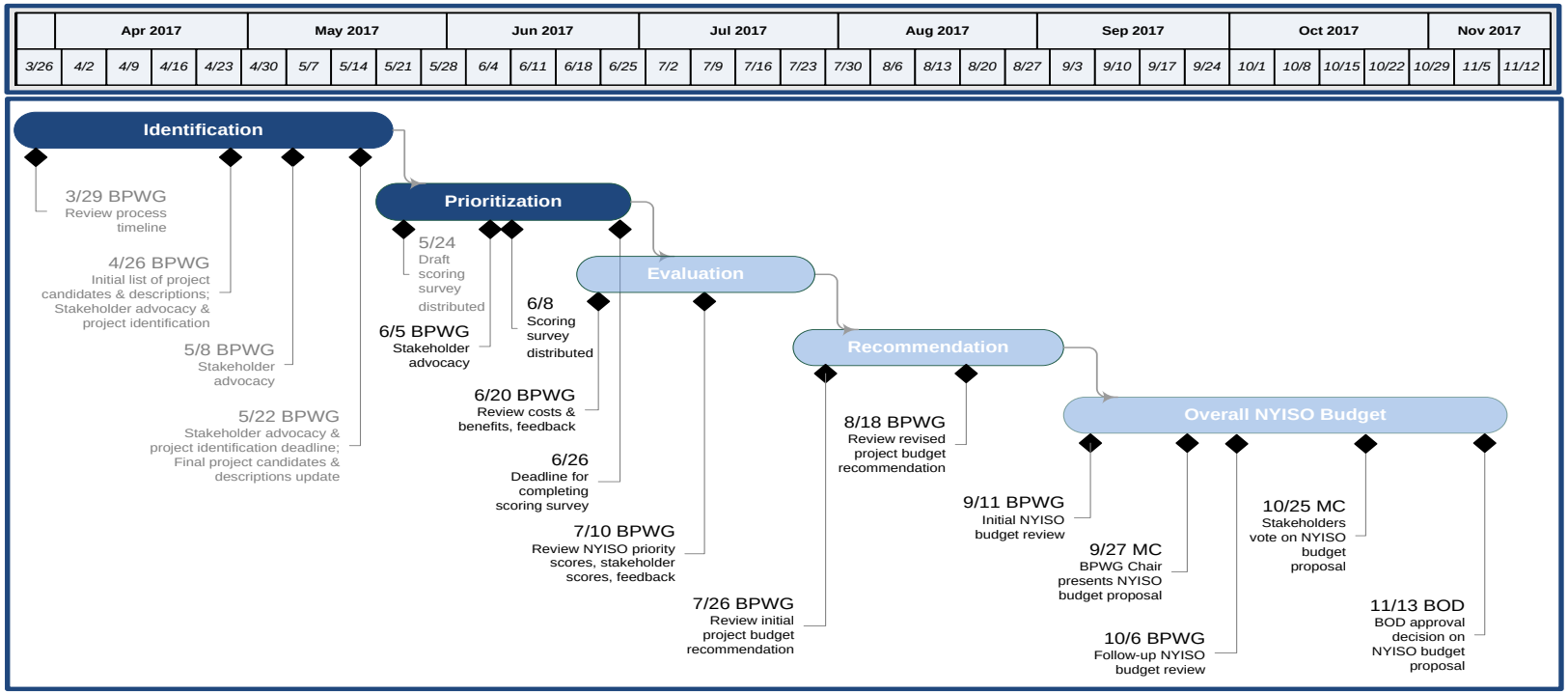
Background

- The NYISO seeks robust stakeholder engagement in the project prioritization process and is committed to continuous improvement of the process
- The NYISO solicited feedback during the 2017 prioritization process and at May 22nd BPWG
- The NYISO reviewed process improvements and timeline at the May 22nd BPWG
- The objectives of this presentation are:
  - Provide NYISO responses to stakeholder feedback
  - Review changes and additions to the 2018 Project Candidates
  - Review Stakeholder Survey mechanics
  - Provide preliminary cost estimates and expected benefits of 2018 Project Candidates

2018 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.

2018 Proposed Project Prioritization Timeline



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Stakeholder Scoring Survey

- Registered shared governance organizations, including non-voting participants and affiliates, will have an opportunity to score projects
- Each organization may provide one survey response with 100 points available to assign to projects based on their priorities
- There will be an opportunity to provide written comments to supplement scoring and identify small projects not selected in previous years

Stakeholder Scoring Survey

- Surveys will be sent to the primary MC representative (unless written notification is provided in advance to use a different contact)
- Surveys will come from Member Relations to avoid being caught in SPAM filters
- Official survey will be distributed June 8th
- Surveys must be submitted by June 26th

2018 Project Candidates – Changes from 5/22 BPWG

The following project titles or descriptions have been updated in the 2018 Project Candidates meeting materials:
Business Intelligence Products: eTariff Webviewer Redesign
Capacity Market Products: On Ramps and Off Ramps
DER Products: DER Participation Model [Mandatory]
Energy Market Products: Renewables Integration Market Design
Energy Market Products: Integrating Public Policy
Finance Products: Electric Quarterly Report (EQR) DSS Report Update
Operations & Reliability Products: EPG PMU Enhancements [NYISO Scored]
Planning Products: Interconnection Process Review

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.

2018 Project Estimated Costs and Expected Benefits

Project	Deliverable	Estimated Cost (in millions $) Labor	Capital	Prof. Serv.	Total	Expected Benefits
Business Intelligence Products						
Enterprise Information Management - Data Integration Phase III	*Deploy*	$0.49	$0.00	$0.15	$0.64	• Improve impact analysis capability • Standardize data extraction and transformation under one technology
Enterprise Information Management - Analytics Environments – Phase II	*Deploy*					• Improve cost effectiveness • Improve the reliability of the environment
Public Website Content Management Platform and Redesign	*Deploy*					• Improve usability • Enhance ability to locate information
NAESB PKI Phase II	*Deploy*					• Meet FERC compliance obligation
Mobile Functionality	*Architecture Design*					• Improve customer experience
Intranet Redesign	*Architecture Design*					
~~eTariff Webviewer Redesign~~	~~*Deploy*~~					~~• Improve usability~~
Third-Party Test Environment	*Deploy*					• Expand testing capabilities to non-NYISO customers • Reduce risk post deployment

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2018 Project Estimated Costs and Expected Benefits

Project	Deliverable	Estimated Cost (in millions $)				Expected Benefits
		Labor	Capital	Prof. Serv.	Total	
Capacity Market Products						
Automate ICAP Import Rights	*Deploy*	$0.20	$0.00	$0.00	$0.20	• Streamline process for procurement of ICAP import rights • Replace fax technology with web
RMR Cost Recovery Phase II	*Deploy*	$0.54	$0.00	$0.15	$0.69	• Enhance reliability by establishing rules and compensation for a generator seeking to deactivate but a resource is required to meet a reliability need
ICAP AMS Redesign & Test Improvements Phase II	*Deploy*	$0.35	$0.00	$0.09	$0.44	• Improve end-user experience • Improve maintainability • Improve testability
ICAP AMS Redesign & Test Improvements Phase III	*Functional Requirements*	$0.12	$0.00	$0.03	$0.15	• Improve end-user experience • Improve maintainability • Improve testability
Alternative Methods for LCRs (SOM)	*Market Design Complete*	$0.13	$0.00	$0.25	$0.38	• Enhance market efficiency • May result in lower cost to load • More stable, transparent, and predictable LCRs
CRIS for External-ROS Transmission Investments	*Functional Requirements*					• Creation of a capacity product that would provide capacity rights for certain transmission investments not eligible for UDRs
Treatment of Locality Exports and Imports (SOM)	*Concept Proposed*					• Establish rules for resources that export from or import to constrained Localities • Evaluate rules for resources importing into constrained localities
On Ramps and Off Ramps	*Market Design Complete*	$0.19	$0.00	$0.35	$0.54	• May result in more timely Locality creation or elimination • Establish more transparent rules for creation and elimination of Localities

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Project	Deliverable	Estimated Cost (in millions $) Labor	Capital	Prof. Serv.	Total	Expected Benefits
Capacity Market Products						
Performance Assurance	*Concept Proposed*	$0.15		$0.20	$0.35	• Incent intra-day operational flexibility • Promote increased resource availability and performance
Competitive Entry Exemption for Increased CRIS	*Concept Proposed*					• Expand the Competitive Entry Exemption to allow for the evaluation of merchant requests for incremental CRIS
Enhanced BSM Mitigation Study Period	*Concept Proposed*					• Enhance the rules governing BSM analyses to better capture in-service dates for Examined Facilities
Review Capacity Physical Withholding Rules	*Concept Proposed*					• Review and potentially update supply side mitigation rules to ensure they protect the markets from anticompetitive behavior effectively
Winter CRIS Enhancements	*Deploy*	$0.11	$0.00	$0.00	$0.11	• Reduces manual processes • Improves efficiency
Payment for Locality Exports	*Concept Proposed*					• May result in a mechanism for compensating exporting capacity resources
CRIS Treatment for Exports	*Concept Proposed*					• May result in rules addressing the expiration of CRIS for exporting capacity resources
BSM Repowering	*Concept Proposed*					• A specially-tailored BSM evaluation process may be able to reduce the potential for over-mitigation of repowering projects
Explore Alternate LCR – Reliability Impact	*Concept Proposed*					• Enhance market signals by tying LCR and/or capacity prices to the incremental reliability contribution of new capacity • May result in lower cost to load
Aligning ECR Bilateral Deadlines						• Reduced barriers to participation in the UCAP bilateral market • Ensure more comparable treatment of ECR and non-ECR resources in the ICAP market

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Project	Deliverable	Estimated Cost (in millions $) Labor	Capital	Prof. Serv.	Total	Expected Benefits
DER Products						
FERC Order No. 745	*Deploy*	$0.21	$0.00	$0.00	$0.21	• Implement FERC order
DER Participation Model	*Market Design Complete*	$0.47	$0.00	$0.45	$0.92	• Provide opportunities for Distributed Energy Resource Participation in Wholesale Markets. Alignment with NYS PSC's REV initiative
Granular Pricing & Market Price Delivery	*Deploy*	$0.20	$0.02	$0.00	$0.21	• Localized market signals for Distributed Energy Resource participation. Improved methods for publicly sharing pricing data
DER Pilot Framework	*Deploy*	$0.39	$0.00	$0.25	$0.64	• Streamline process for new technologies and resources to demonstrate capability and gain operational confidence before wholesale market implementation

2018 Project Estimated Costs and Expected Benefits

Project	Deliverable	Estimated Cost (in millions $) Labor	Capital	Prof. Serv.	Total	Expected Benefits
Energy Market Products						
Energy Storage Integration and Optimization	*Market Design Complete*	$0.16	$0.00	$0.00	$0.16	• Improve modeling of resources that can inject and withdraw energy from the grid in response to NYISO dispatch signals • Increase market efficiency through more economic utilization of storage resources
RTC-RTD Convergence Improvements (SOM)	*Concept Proposed*	$0.06	$0.00	$0.00	$0.06	• Potential reduction in real time price volatility • Potential for more efficient resource scheduling
5-minute Transaction Scheduling	*Study Comp.*	$0.07	$0.00	$0.30	$0.37	• Additional flexibility to secure the system in real time • More efficient utilization of interties with neighboring control areas • Reduction in uneconomic scheduling of transactions • Potential reduction in real time price volatility
15-minute Transaction Scheduling – IESO	*Concept Proposed*	$0.04	$0.00	$0.00	$0.04	• Increased economic efficiency for both IESO and the NYISO through more effective utilization of the intertie • Potential reduction in real time price volatility
Model 100+kV Transmission Constraints (SOM)	*Market Design Complete*	$0.08	$0.00	$0.00	$0.08	• Improve alignment of markets and EMS model • More efficient pricing of transmission constraints • Improved market signals • Potential for more efficient resource scheduling
Constraint Specific Transmission Demand Curves (SOM)	*Market Design Complete*	$0.06	$0.00	$0.00	$0.06	• More efficient pricing of transmission constraints • Potential reduction in price volatility • Potential for more efficient resource scheduling

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2018 Project Estimated Costs and Expected Benefits

Project	Deliverable	Estimated Cost (in millions $)				Expected Benefits
		Labor	Capital	Prof. Serv.	Total	
Energy Market Products						
FERC Order 831: Offer Caps	*Deploy*	$0.33	$0.00	$0.06	$0.39	• Allow market to reflect actual generation cost during extreme conditions up to the $2000/MWh hard cap • Compliance with a mandatory FERC Order • Align with the offer caps of neighboring ISO/RTOs
Large Solar Participation Model	*Concept Proposed*					• Improve the modeling of large solar resources • Guard against potential reliability issues from large intermittent solar resources
Mitigation Bid Transparency	*Deploy*					• Provide additional data involved in price formation
~~Renewables Integration Market Design~~	~~*Study Comp.*~~					
Reinstitute Import Guarantees	*Concept Proposed*					• Potential for improved liquidity at the external interfaces
Integrating Public Policy	*Concept Proposed*					• Harmonize state decarbonization policies with New York's wholesale market design • Evolve wholesale market incentives to maintain grid reliability

2018 Project Estimated Costs and Expected Benefits

Project	Deliverable	Estimated Cost (in millions $) Labor	Capital	Prof. Serv.	Total	Expected Benefits
Enterprise Products						
Database Platform Upgrades Phase II	*Deploy*	$0.25	$0.40	$0.09	$0.74	• Improve performance of various databases • Upgrade to latest version of Oracle
Telephony System Upgrade	*Deploy*	$0.14	$0.00	$0.15	$0.29	• Improve cost effectiveness • Enhance service levels
Application Platform Upgrade Phase V	*Deploy*	$0.81	$1.12	$0.15	$2.08	• Improve performance and availability • Improve support for technology
Identity and Access Management (IAM) – 2018	*Deploy*					• Improve availability and security • Improve compliance
Application Testing Improvements Phase II	*Deploy*	$0.28	$0.06	$0.25	$0.59	• Automate test scripts • Reduce risk
Software AG Upgrade	*Deploy*	$0.23	$0.00	$0.00	$0.23	• Improve performance and availability • Improve support for technology
Corporate Workstation Replacement	*Deploy*	$0.19	$0.25	$0.07	$0.51	• Improve performance and availability • Improve support for technology
Laptop Refresh and Upgrade	*Deploy*	$0.22	$0.54	$0.08	$0.84	• Improve performance and availability • Improve support for technology
Microsoft Systems Upgrade	*Deploy*	$0.38	$3.00	$0.00	$3.38	• Improve performance and availability • Improve support for technology
Network Infrastructure Upgrade	*Deploy*	$0.23	$2.34	$0.00	$2.57	• Improve performance and availability • Improve support for technology
Planning High Performance Computing (HPC) Platform Upgrade	*Deploy*					• Improve performance and availability • Improve support for technology

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Project	Deliverable	Estimated Cost (in millions $) Labor	Capital	Prof. Serv.	Total	Expected Benefits
Finance Products						
North Subzone Redistricting	*Deploy*	$0.37	$0.00	$0.00	$0.37	• Reduce Unaccounted For Energy
Transactions Modifications & Confirmation Tool	*Architecture Design*	$0.03	$0.00	$0.00	$0.03	• Improve efficiencies and reduce risk
CMS/ ConInvoice Data Integration	*Functional Requirements*	$0.03	$0.00	$0.00	$0.03	• Reduce manual processes • Improve efficiencies and reduce risk
Expense Reports Automation	*Deploy*	$0.22	$0.00	$0.13	$0.34	• Improve efficiencies
Rate Schedule 12 Settlement	*Deploy*	$0.49	$0.00	$0.00	$0.49	• Provide Rate Schedule 12 settlements per tariff
CMS Projected True-up Exposure Enhancement	*Deploy*	$0.19	$0.00	$0.00	$0.19	• Ensure credit requirements are aligned with market risk
FERC Form1 Redesign	*Deploy*	$0.10	$0.00	$0.00	$0.10	• Meet new FERC standards
Vendor Management Tool	*Functional Requirements*	$0.08	$0.00	$0.00	$0.08	• Eliminate manual processes • Reduce risk
Electric Quarterly Report (EQR) DSS Report Update	*Deploy*	$0.11	$0.00	$0.00	$0.11	• Support MPs in meeting FERC expanded EQR requirements

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Project	Deliverable	Estimated Cost (in millions $) Labor	Capital	Prof. Serv.	Total	Expected Benefits
Operations & Reliability Products						
EMS/BMS System Upgrade	*Dev. Comp.*	$5.06	$0.60	$1.71	$7.37	• Increase supportability • Increase platform stability
TOA Platform Upgrade Phase II	*Dev. Comp.*	$0.15	$0.00	$1.14	$1.28	• Increase supportability • Avoid obsolescence
2017 Reference Level Software Enhancements	*Deploy*	$0.32	$0.00	$0.18	$0.50	• Improve speed and accuracy in identifying potential problems with reference levels
PI System Upgrade	*Dev. Comp*	$0.11	$0.00	$0.00	$0.11	• Increase supportability • Avoid obsolescence
EMS/BMS Workstation Upgrade	*Dev. Comp.*	$0.10	$1.08	$0.00	$1.18	• Increase supportability • Increase platform stability
Gurobi (MIP) Hardware Refresh	*Dev. Comp.*	$0.03	$0.30	$0.00	$0.33	• Increase supportability • Avoid obsolescence
Gurobi (MIP) Software Upgrade	*Dev. Comp.*	$0.11	$0.00	$0.00	$0.11	• Increase supportability • Avoid obsolescence
Load Forecaster Upgrade & Buildout	*Dev. Comp.*	$0.28	$0.06	$0.08	$0.41	• Maintain reliability • Maintain vendor support
EPG PMU Enhancements	*Deploy*					• Assist in validating, conditioning, and analyzing PMU data • Improve situational awareness • Increase distribution of data to internal users

2018 Project Estimated Costs and Expected Benefits

Project	Deliverable	Estimated Cost (in millions $) Labor	Capital	Prof. Serv.	Total	Expected Benefits
Planning Products						
Interconnection Project Queue (or Portal) Automation	*Functional Requirements*	$0.19	$0.00	$0.20	$0.39	• Improve interconnection process to ensure resources are available and able to respond to resource adequacy market signals
Transmission Planning Process Review	*Concept Proposed*					• Review transmission planning process to evaluate potential improvements
Model on Demand Upgrade and Build-Out	*Deploy*	$0.06	$0.07	$0.03	$0.16	• Upgrade the version of the MOD application to improve supportability and performance • Build out an additional test environment for greater ability to test and upgrade the application in the future
Interconnection Process Review						• Market Participant suggests project may improve interconnection process

2018 Project Estimated Costs and Expected Benefits

Project	Deliverable	Estimated Cost (in millions $)				Expected Benefits
		Labor	Capital	Prof. Serv.	Total	
TCC Products						
On-Peak/Off-Peak TCCs	*Study Comp.*					

2018 Project Dependencies

Project	Depends On	Comment
EMS/BMS Workstation Upgrade	EMS/BMS System Upgrade	TBD
PI System Upgrade	EMS/BMS System Upgrade	TBD
Automate ICAP Import Rights	ICAP AMS Redesign and Testing Improvements Phase II	TBD
ICAP AMS Redesign and Testing Improvements Phase III	ICAP AMS Redesign and Testing Improvements Phase II	TBD

Next Steps

- Written feedback may be provided up till June 9th for inclusion in June 20th BPWG
- Send to Leigh Bullock and Brian Hurysz
  - LBullock@nyiso.com : (518) 356-7503
  - BHurysz@nyiso.com : (518) 356-6126
- Stakeholder Advocacy at June 20th BPWG
- Cost and benefits review all projects June 20th BPWG
- The deadline to submit stakeholder scoring surveys is June 26th BPWG
- We will review NYISO priority scores and stakeholder scoring at the July 10th BPWG

Questions?

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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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