



2017 Project Prioritization & Budgeting Process

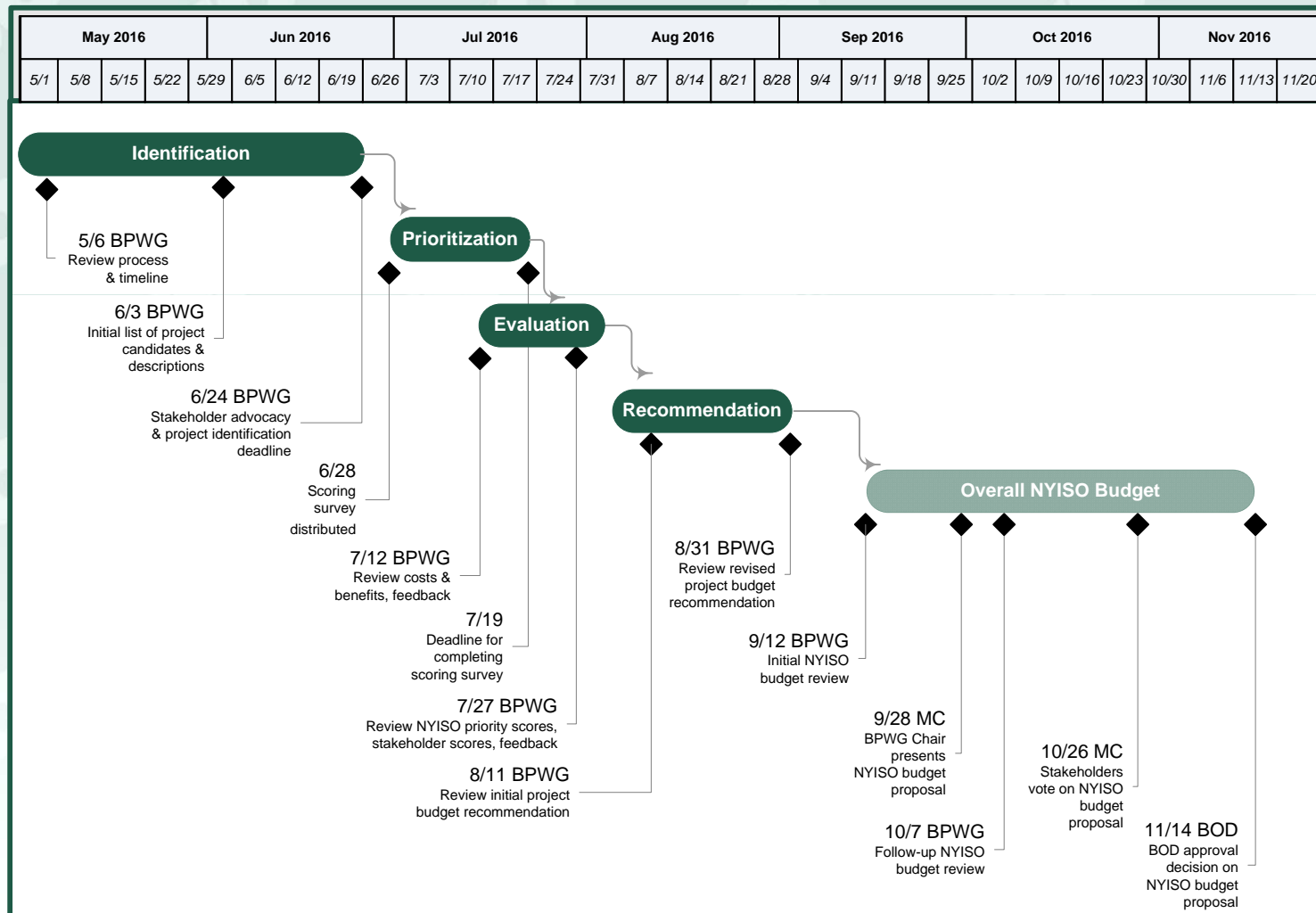
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Budget & Priorities Working Group
July 12, 2016
Krey Corporate Center

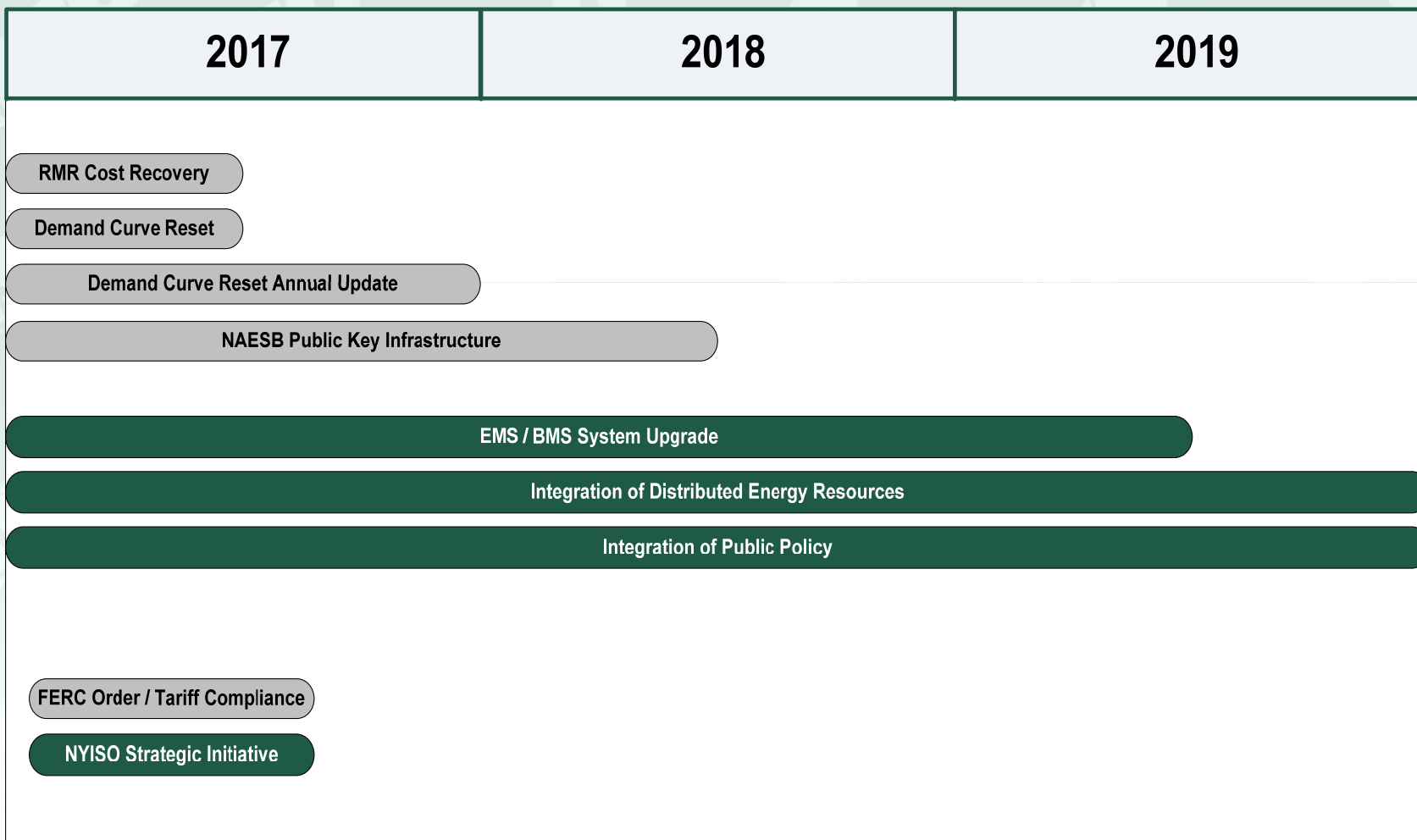
2017 Project Prioritization Process

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.

2017 Project Prioritization Timeline



Strategic Initiatives & FERC Orders



2017 Project Costs / Benefits

Project	Deliverable	Estimated Cost (in millions \$)				Benefits
		Labor	Capital	Prof. Serv.	Total	
Business Intelligence Products						
Enterprise Information Management - Data Integration Phase III	Deploy	0.36	0.00	0.00	0.36	<ul style="list-style-type: none"> • Improve impact analysis capability • Standardize data extraction and transformation under one technology
Customer Relationship Management Tool	Deploy	0.06	0.33	0.00	0.39	<ul style="list-style-type: none"> • Improved customer experience • Improved contact management
NAESB PKI Phase 2	Deploy	0.32	0.00	0.00	0.32	<ul style="list-style-type: none"> • Meet FERC compliance obligation
Key Topics Tracking for Public Website	Deploy	0.07	0.00	0.00	0.07	<ul style="list-style-type: none"> • Ease of access to related documentation
Public Website Refresh	Architecture Design	0.15	0.00	0.30	0.45	<ul style="list-style-type: none"> • Improve usability • Enhance ability to locate information
Public Website Calendar	Architecture Design	0.05	0.00	0.00	0.05	<ul style="list-style-type: none"> • Improve usability
Mobile Applications	Deploy	0.08	0.06	0.00	0.14	<ul style="list-style-type: none"> • Improve customer experience
eTariff Webviewer Enhancements	Deploy	0.04	0.00	0.03	0.06	<ul style="list-style-type: none"> • Improve usability • Reduce risk
Secure Communications	Deploy	0.14	0.00	0.00	0.14	<ul style="list-style-type: none"> • Improve performance

2017 Project Costs / Benefits

Project	Deliverable	Estimated Cost (in millions \$)				Benefits
		Labor	Capital	Prof. Serv.	Total	
Capacity Market Products						
ICAP AMS Redesign & Testing Improvements Phase 1	System Design	0.37	0.00	0.00	0.37	<ul style="list-style-type: none"> Improved end-user experience Improved maintainability Improved testability
RMR Cost Recovery Phase II	Deploy	0.67	0.00	0.00	0.67	<ul style="list-style-type: none"> Enhances reliability by establishing rules and compensation for a generator seeking to deactivate but is required to remain in service to meet a reliability need
GADS Reporting	System Design	0.08	0.00	0.00	0.08	<ul style="list-style-type: none"> Improve timeline for reviewing GADS Data and assessing penalties.
Modifications to GADS Reporting Software for IIFO	Deploy	0.02	0.00	0.10	0.12	<ul style="list-style-type: none"> Allow new outage states to be reported Updated calculations to account for new states
Automate ICAP Import Rights	Deploy	0.09	0.00	0.00	0.09	<ul style="list-style-type: none"> Streamlined process for procurement of ICAP import rights Replace fax technology with web
Demand Curve Reset	Study	0.04	0.00	0.06	0.10	<ul style="list-style-type: none"> Updated price signals, reflecting the latest net cost of new entry estimates
Demand Curve Reset Annual Updates	Deploy	0.25	0.00	0.10	0.35	<ul style="list-style-type: none"> Development of internal tools required to support DCR Annual Update process
Elimination of Capacity Zones (SOM)	Concept Proposed	0.64	0.00	0.00	0.64	<ul style="list-style-type: none"> Establishes rules for elimination of capacity zones
On Ramps and Off Ramps for Zones	Concept Proposed	0.45	0.00	0.00	0.45	<ul style="list-style-type: none"> May result in more timely zone creation or elimination
Dynamic Creation of Zones	Concept Proposed	0.82	0.00	0.00	0.82	<ul style="list-style-type: none"> Allow locational capacity prices to immediately adjust to changes in market conditions
Alternative Methods for Determining LCRs (SOM)	Market Design Complete	0.86	0.00	0.75	1.61	<ul style="list-style-type: none"> Enhance market efficiency More accurate BSM forecasts May result in lower cost to load

2017 Project Costs / Benefits

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Capacity Market Products						
Incremental Enhancement to BSM Forecasts of ICAP Prices (SOM)	Concept Proposed	0.31	0.00	0.00	0.31	<ul style="list-style-type: none"> • More accurate ICAP and EAS BSM forecasts • Incent intra-day operational flexibility • Promote increased resource availability and performance • Grant MPs funding upgrades a capacity benefit associated with the upgrade • May incent economic transmission • May provide incentives to resources or facilities affecting deliverability constraints • Helps ensure markets continue to incent competitive resources • Establishes rules for resources that export from import constrained Localities • Simplifies/automates ICAP Import Processes • May enhance certainty of achieving reliability targets during gas shortage conditions • May enhance resource adequacy while reducing the probability that a regulated planning solution is required • May provide foresight to new market design initiatives to facilitate the CES
Performance Assurance	Concept Proposed	0.63	0.00	0.25	0.88	
Incremental External CRIS Rights	Market Design Complete	0.57	0.00	0.00	0.57	
Capacity Transfer Rights for Internal Transmission Upgrades (SOM)	Concept Proposed	1.05	0.00	0.00	1.05	
BSM to Address Other Price Suppression Actions (SOM 5)	Concept Proposed	0.60	0.00	0.00	0.60	
Treatment of Capacity Exports from Localities (SOM 8)	Market Design Complete	0.99	0.00	0.00	0.99	
Economically Allocate Import Rights	Concept Proposed	0.83	0.00	0.00	0.83	
Fuel Assurance - Dual Fuel Requirements for Gas-Fired Generators	Concept Proposed	0.71	0.00	0.00	0.71	
Forward Capacity Market	Concept Proposed	0.33	0.00	0.00	0.33	
Integrating Public Policy	Study	0.04	0.00	0.00	0.04	

2017 Project Costs / Benefits

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Demand Response Products						
Business Objects Enhancements for DRIS Data	Deploy	0.06	0.00	0.00	0.06	<ul style="list-style-type: none"> Expanded NYISO's reporting capabilities and elimination of manual processes
Distributed Energy Resource Program Design	Concept Proposed	0.18	0.00	0.00	0.18	<ul style="list-style-type: none"> Provide opportunities for Distributed Energy Resource Participation in Wholesale Markets. Alignment with NYS PSC's REV initiative and compliance with FERC orders 719 and 745
NYISO Pilot Framework	Market Design Complete	0.01	0.00	0.08	0.09	<ul style="list-style-type: none"> Streamline process for new technologies and resources to operate in wholesale market on small scale and attempt demonstrate projected benefits
Granular Pricing & Market Price Delivery	Concept Proposed	0.03	0.00	0.00	0.03	<ul style="list-style-type: none"> Localized market signals for Distributed Energy Resource participation. Improved methods for publicly sharing pricing data
Meter Data Policy	Study	0.06	0.00	0.10	0.16	<ul style="list-style-type: none"> Eliminate barriers to entry for Distributed Energy Resources and Aggregators. Establish a workable framework for Measurement, Verification, and Meter Data Certification
State of Charge Management for Energy Storage	Development Complete	0.09	0.00	0.00	0.09	<ul style="list-style-type: none"> Expand state-of-charge signal for regulation service to storage devices that are participating in programs other than the Limited Energy Storage Resource (LESR).
Limited Resource Performance Obligations: Evaluate Minimum Performance Obligation for Capacity Resources	Market Design Complete	0.06	0.00	0.00	0.06	<ul style="list-style-type: none"> Evaluate minimum performance duration for resources participating in the Capacity Market and standardize across all programs

2017 Project Costs / Benefits

Project	Deliverable	Estimated Cost (in millions \$)				Benefits
		Labor	Capital	Prof. Serv.	Total	
Energy Market Products						
ConEd/PSEG Wheel (SOM)	Deploy	0.28	0.01	0.12	0.41	<ul style="list-style-type: none"> • New scheduling protocol to address the termination of the ConEd/PSEG wheeling agreement
Outage Analysis Tool	Study	0.03	0.00	0.00	0.03	<ul style="list-style-type: none"> • Ability to better analyze costs and reliability associated with outage requests.
Fuel Assurance - Constrained Fuel Supply Bidding (SOM)	Market Design Complete	0.03	0.00	0.00	0.03	<ul style="list-style-type: none"> • More efficient scheduling of resources with energy or fuel limitations
ACD Dataset Reporting	Deploy	0.06	0.00	0.00	0.06	<ul style="list-style-type: none"> • Improved efficiency • Reduced risk
Integration of OFO status into SUEDE	Development Complete	0.14	0.00	0.00	0.14	<ul style="list-style-type: none"> • Improved efficiency • Reduced risk
Energy Storage Integration & Optimization	Market Design Complete	0.10	0.00	0.00	0.10	<ul style="list-style-type: none"> • More efficient scheduling • Better utilization of storage resources
Quarterly Congestion Reporting	Deploy	0.14	0.00	0.00	0.14	<ul style="list-style-type: none"> • Improved efficiency • Reduced risk
Long Island PAR Optimization & Financial Rights (SOM)	Concept Proposed	0.10	0.00	0.00	0.10	<ul style="list-style-type: none"> • More efficient scheduling • Reduction in DAM production costs
Hybrid GT Pricing Improvements (SOM)	Functional Requirements	0.05	0.00	0.00	0.05	<ul style="list-style-type: none"> • Improved price signals • More efficient real-time scheduling
RTC/RTD Forward Horizon Coordination Improvements (SOM)	Functional Requirements	0.10	0.00	0.00	0.10	<ul style="list-style-type: none"> • Improved price signals • More efficient real-time scheduling • Reduced systematic price volatility
Review of RACT Compliance Plans (SOM)	Concept Proposed	0.05	0.00	0.00	0.05	<ul style="list-style-type: none"> • Increased visibility into costs of environmental compliance
5 minute Transaction Scheduling (SOM)	Concept Proposed	0.10	0.00	0.00	0.10	<ul style="list-style-type: none"> • Improved price signals • More efficient scheduling • Reduce residuals

2017 Project Costs / Benefits

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		Labor	Capital	Prof. Serv.	Total	
Energy Market Products						
Model 100+KV Transmission Constraints (SOM)	Concept Proposed	0.05	0.00	0.00	0.05	<ul style="list-style-type: none"> • Improve alignment of markets and EMS model • Improved price signals • More efficient scheduling
Graduated Transmission Demand Curves (SOM)	Market Design Complete	0.03	0.00	0.00	0.03	
Scarcity Pricing Tariff Revision	Deploy	0.08	0.00	0.22	0.30	<ul style="list-style-type: none"> • Reduce residuals • Resolve concerns related to the comprehensive scarcity pricing logic approved by stakeholders
Offer Cap Enhancement for FERC	Concept Proposed	0.05	0.00	0.00	0.05	<ul style="list-style-type: none"> • May be needed to meet FERC compliance obligation pending outcome of FERC NOPR
Ontario Pricing	Market Design Complete	0.03	0.00	0.00	0.03	<ul style="list-style-type: none"> • Improved price signals • More efficient scheduling
Reinstitute Import Guarantees	Concept Proposed	0.05	0.00	0.00	0.05	<ul style="list-style-type: none"> • Improved price signals • More efficient scheduling
Eliminate Fees for CTS Transactions with PJM (SOM)	Concept Proposed	0.05	0.00	0.00	0.05	<ul style="list-style-type: none"> • Improved price signals • More efficient scheduling
Changes to Selkirk Market Modeling	Concept Proposed	0.03	0.00	0.00	0.03	<ul style="list-style-type: none"> • More efficient scheduling
Fractional MW Load Bidding	Concept Proposed	0.03	0.00	0.00	0.03	<ul style="list-style-type: none"> • More accurate forecasted load bid • Improved price signals
Startup Cost Compensation	Concept Proposed	0.03	0.00	0.00	0.03	<ul style="list-style-type: none"> • Improved price signals • More efficient scheduling
DAM Scheduling for ICAP Suppliers	Deploy	0.32	0.00	0.30	0.62	<ul style="list-style-type: none"> • Joins data from multiple systems to provides ICAP suppliers an indication if minimum bid criteria has been satisfied

2017 Project Costs / Benefits

Project	Deliverable	Estimated Cost (in millions \$)				Benefits
		Labor	Capital	Prof. Serv.	Total	
Enterprise Products						
Storage Infrastructure Redesign Phase III	Deploy	0.19	3.56	0.02	3.76	<ul style="list-style-type: none"> • Allows retirement of older technologies • Reduces cost of ownership
Database Platform Upgrade Phase II	Deploy	0.33	0.24	0.00	0.57	<ul style="list-style-type: none"> • Improves performance of various databases • Upgrades to latest version of Oracle
Telephony System Upgrade	Deploy	0.39	0.00	0.18	0.57	<ul style="list-style-type: none"> • Improves cost effectiveness • Enhances service levels
Application Platform Upgrade Phase IV	Deploy	0.71	0.39	0.12	1.22	<ul style="list-style-type: none"> • Improves support for technology • Improves performance • Aligns with long-term strategy
Identity and Access Management - 2017	Deploy	0.59	0.00	0.00	0.59	<ul style="list-style-type: none"> • Improves availability and security • Improves compliance
Marketplace and Webforms Technology Upgrade	Deploy	0.33	0.00	0.02	0.35	<ul style="list-style-type: none"> • Enhances interfaces used by MP's • Improves security
Software AG Upgrade	Deploy	0.26	0.27	0.09	0.62	<ul style="list-style-type: none"> • Improves performance • Improves support for technology
Backup Enhancements	Deploy	0.18	1.75	0.07	2.00	<ul style="list-style-type: none"> • Standardizes and shorten data recovery • Reduces cost of ownership
Application Testing Improvements	Deploy	0.30	0.00	0.22	0.52	<ul style="list-style-type: none"> • Automates test scripts • Reduces risk
Enterprise Job Scheduling Upgrade	Deploy	0.12	0.06	0.18	0.36	<ul style="list-style-type: none"> • Improves performance • Improves support for technology

2017 Project Costs / Benefits

Project	Deliverable	Estimated Cost (in millions \$)				Benefits
		Labor	Capital	Prof. Serv.	Total	
Finance Products						
North Subzone Redistricting	System Design	0.23	0.00	0.00	0.23	<ul style="list-style-type: none"> • Reduce Unaccounted For Energy • Reduce manual processes • Improve efficiencies and reduce risk
Rate Schedule 1 Technology Automation	Deploy	0.10	0.00	0.00	0.10	<ul style="list-style-type: none"> • Improve settlement calculation
Day Ahead Margin Assurance Payment (DAMAP) Enhancements	Deploy	0.06	0.00	0.00	0.06	<ul style="list-style-type: none"> • Provide additional visibility using DSS
Settlements Sub Accounts	System Design	0.06	0.00	0.00	0.06	<ul style="list-style-type: none"> • Increase flexibility for FRPs
Sub Accounts with Unique Invoicing, Banking and Reporting	Deploy	0.82	0.00	0.00	0.82	<ul style="list-style-type: none"> • Improve supportability
Transmission Service Charges Rate Update	Deploy	0.20	0.00	0.00	0.20	<ul style="list-style-type: none"> • Improve efficiencies and reduce risk
Transactions Modifications & Confirmation Tool	Functional Requirements	0.09	0.00	0.00	0.09	<ul style="list-style-type: none"> • Assess impacts of sub-hourly metering
Settlement at Sub-hourly Metering - Study	Study	0.03	0.00	0.00	0.03	<ul style="list-style-type: none"> • Provide Rate Schd 12 settlements per tariff • Reduce manual processes • Improve efficiencies and reduce risk
Rate Schedule 12 Settlement	Functional Requirements	0.27	0.00	0.00	0.27	<ul style="list-style-type: none"> • Assure credit risks have been addressed
CMS/ ConInvoice Data Integration	Deploy	0.12	0.00	0.00	0.12	<ul style="list-style-type: none"> • Improve efficiencies
CMS Projected True-up Exposure Study	Study	0.02	0.00	0.00	0.02	<ul style="list-style-type: none"> • Improve flexibility
Expense Reports Automation	Architecture Design	0.09	0.00	0.00	0.09	<ul style="list-style-type: none"> • Improve efficiencies
Financial Reporting Tools	Deploy	0.08	0.00	0.00	0.08	<ul style="list-style-type: none"> • Improve efficiencies
Contract Management	Architecture Design	0.12	0.00	0.00	0.12	

2017 Project Costs / Benefits

Project	Deliverable	Estimated Cost (in millions \$)				Benefits
		Labor	Capital	Prof. Serv.	Total	
Operations & Reliability Products						
EPG PMU Simulator	Deploy	0.06	0.20	0.05	0.30	<ul style="list-style-type: none"> • Enhanced training capability for historic events using synchrophasor data
PMU Enhancements	Deploy	0.09	0.00	0.50	0.59	<ul style="list-style-type: none"> • Improved situational awareness • Increased distribution of data to internal users
Smart Grid Visualization	Deploy	0.01	0.00	0.00	0.01	<ul style="list-style-type: none"> • Improved data and analytics for operators • Improved situational awareness
TOA Platform Upgrade Phase II	Deploy	0.23	0.20	0.79	1.22	<ul style="list-style-type: none"> • Increased supportability • Avoids obsolescence
EMS BMS System Upgrade	Development Complete	3.98	1.20	7.98	13.16	<ul style="list-style-type: none"> • Increased supportability • Increased platform stability
2017 Reference Level Software Enhancements	System Design	0.22	0.00	0.12	0.34	<ul style="list-style-type: none"> • Improved speed and accuracy in identifying potential problems with reference levels
Gas Balancing Position Reporting	Deploy	0.03	0.00	0.00	0.03	<ul style="list-style-type: none"> • Improved efficiency of economic and physical withholding investigation
FERC Funded Rerun - Phase 4	Deploy	0.09	0.01	0.00	0.10	<ul style="list-style-type: none"> • Improved efficiency of meeting FERC Office of Enforcement requests
SUEDE Front End Toolset	Deploy	0.27	0.00	0.00	0.27	<ul style="list-style-type: none"> • Improved efficiency and analytics

2017 Project Costs / Benefits

Project	Deliverable	Estimated Cost (in millions \$)				Benefits
		Labor	Capital	Prof. Serv.	Total	
Planning Products						
Solar Forecasting Initiatives	Deploy	0.17	0.00	0.35	0.52	• Provides load forecast visibility to New York installed solar
Interconnection Process Review	Concept Proposed	0.20	0.00	0.00	0.20	• Improved interconnection process
Public Policy Transmission Planning Process Acceleration	Concept Proposed	2.04	1.00	2.00	5.04	• Improved transmission planning process

2017 Project Costs / Benefits

Project	Deliverable	Estimated Cost (in millions \$)				Benefits
		Labor	Capital	Prof. Serv.	Total	
TCC Products						
TCC Balance-of-Period (TCC AMS, TCC AVS & CMS)	Deploy	0.53	0.01	0.50	1.03	<ul style="list-style-type: none"> • Evolves TCC Market to allow MPs to reconfigure remaining months in a capability period • Extends TCC Auction validations for BoP format • Extends credit policy to hold collateral for months remaining in capability period

2017 Project Dependencies

Project	Depends On	Comment
Energy Market Products		
Fuel Assurance - Constrained Fuel Supply Bidding (SOM)	EMS BMS System Upgrade	This is an implementation dependency only; Market design may occur concurrently with the EMS BMS system upgrade
Energy Storage Integration & Optimization		
Linked Virtual Buy-Sell Transactions		
Targeted Virtual Trading		
Long Island PAR Optimization & Financial Rights (SOM)		
Hybrid GT Pricing Improvements		
RTC/RTD Forward Horizon Coordination Improvements (SOM)		
Enhanced PAR Modeling (SOM)		
Fuel Limited Reserves (SOM)		
5 minute Transaction Scheduling (SOM)		
15 minute Transaction Scheduling – HQ Cedars (SOM)		
15 minute Transaction Scheduling – IESO (SOM)		
Transmission as Reserves (SOM)		

2017 Project Dependencies

Project	Depends On	Comment
Energy Market Products		
Graduated Transmission Demand Curves (SOM)	EMS BMS System Upgrade	This is an implementation dependency only; Market design may occur concurrently with the EMS BMS system upgrade
Improve DAM GT Scheduling (SOM)		
Ontario Pricing		
Fractional MW Load Bidding		
Startup Cost Compensation		
Operations & Reliability Products		
PMU Enhancements	EPG PMU Simulator	These technology upgrades are required in support of the EMS BMS system upgrade
EMS BMS System Upgrade	Database Platform Upgrade Phase II	
	Software AG Upgrade	
	TOA Platform Upgrade Phase II	

Next Steps

- ◆ **The deadline to submit stakeholder scoring surveys is July 19th**
- ◆ **We will review NYISO priority scores and stakeholder scoring at the July 27th BPWG meeting**
- ◆ **We will review an initial project budget recommendation at the August 11th BPWG meeting**
- ◆ **We will review a revised project budget recommendation at the August 31st BPWG meeting**

The mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefit to consumers 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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