OCTOBER 5, 2022 NATIONALS PARK, WASHINGTON DC

CASE STUDIES – SUCCESSFUL IMPLEMENTATION OF AN INTEGRATED SCHEDULE / COST CONTROL SYSTEM



ROHAN P. MUTHA, CCM, CCP, PSP, LEED AP, EIT PROGRAM AND PROJECT CONTROLS PRACTICE LEAD AECOM

WHY WERE WE CALLED UPON?

Performance Measurement

- Establish KPI Protocols
- Assess the performance of the program
- Assist the Executive Management in improving the performance of the program

Review Existing System

- Review the existing Project Controls processes, procedures and systems
- Perform GAP analysis
- Recommend best practices

Develop and implement an integrated Project Controls platform

- Provides realistic projection of fiscal budget and earned value assessment
- Allows adequate scalability on the design of the system so that it can be implemented enterprise-wide on other programs



STATE OF EXISTING SYSTEMS

Lack of integrated schedule/cost system

Inadequate project capital fiscal budget planning

Performance measurement lacked earned value assessment



OUR APPROACH / STRATEGY Understand the Enterprise Structure of the Organization and how costs need to be tracked

Develop Enterprise Project Structure (EPS) / Project Work Breakdown Structure

Establish Work Breakdown Structure keeping in mind the Enterprise needs
Early decision of what not to change (Accounting system) to optimize the path of least resistance
Map the Accounting data to integrated schedule/ cost system

Start with Pilot Project

Some Project Managers were apprehensive.Note chosen project was an ongoing project

Develop Master Schedule

Emulate the Enterprise Structure / WBS in Scheduling System
Key Activities and Milestones
Cost Load at the activity / work packages level

Implement Earned Value Management

• Compare with Actual Cost at a higher level of the WBS

•Capture Accruals

•Conduct Intellectual Interrogation of the numbers before publishing them

Develop Dashboard Reporting

Excel, Visio, Microsoft Power Bl
Use Combination of WBS and Activity Codes in P6

Derive Fiscal Budgets



SOME KEY TERMINOLOGY:

BCWS (Budgeted Cost of	BCWP (Budgeted Cost of	ACWP (Actual Cost of Work	BAC – Budget at Completion
Work Scheduled) – Planned	Work Performed) – Earned	Performed) – Actual Cost	
Value (PV) – Cost of work	Value (EV) - Cost of work	(AC) – Actual cost spent	
planned from inception till	earned from inception till	from inception till the	
the desired date.	the desired date.	desired date	
CPI – Cost Performance	SPI – Schedule Performance	CV – Cost Variance = EV - AC	SV – Schedule Variance = EV
Index = EV/AC	Index = EV/PV		- PV
	ETC – Estimate to Complete = BAC - EV	EAC – Estimate at Completion = AC + ETC	



THREE PROGRAMS

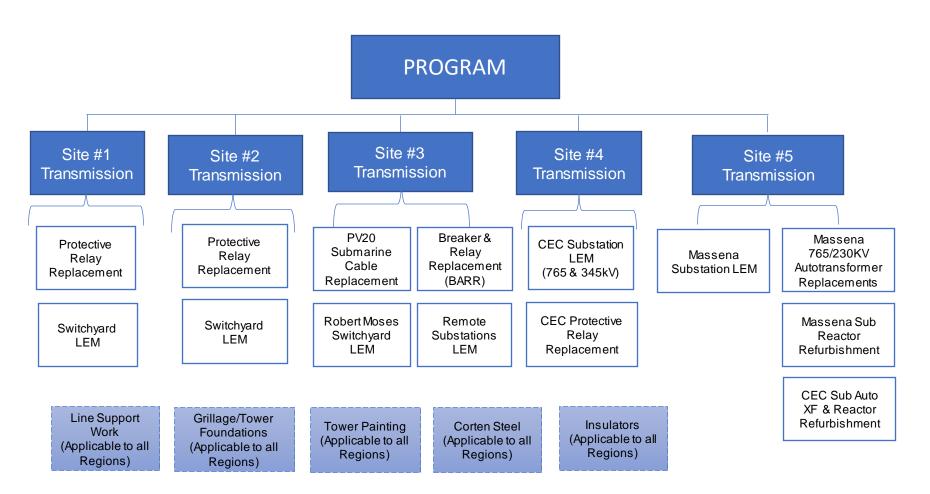


PROGRAM 1

- Program 1 involved extending and modernizing transmission lines and various power substations. Budget: \$726 million.
- On-going Program
- Pilot program
- Only accounted Cost. No resources.
- We established and implemented a Scalable integrated Project Controls Management (PCM) platform that integrated the management of schedule and cost in a way that enables consistent and structured assessment, projecting / trending, and performance reporting throughout the life of the program.
- Developed Realistic Fiscal Budgets.

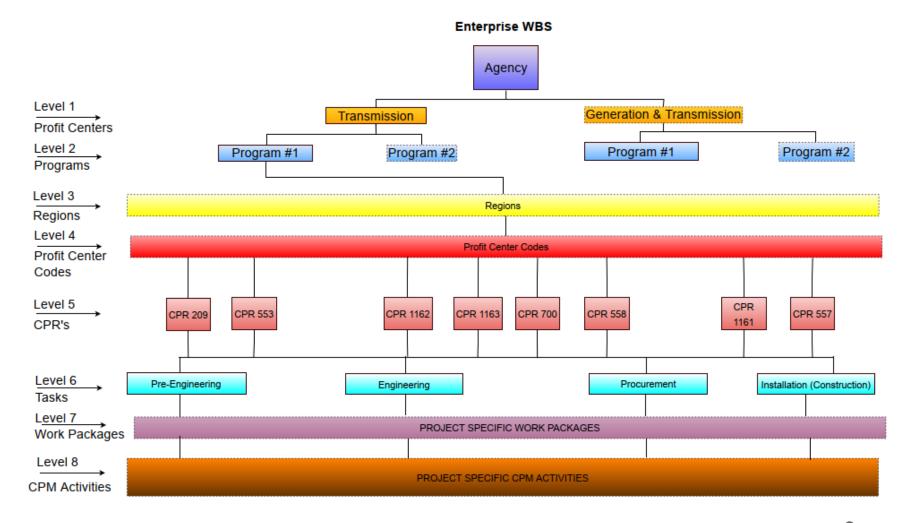


PROGRAM OVERVIEW



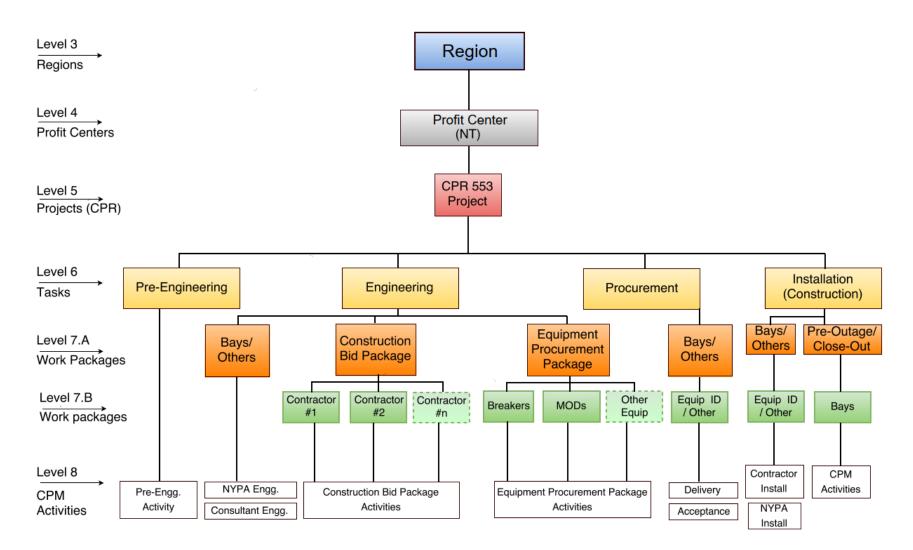


ENTERPRISE PROJECT STRUCTURE (EPS)



Project Controls

WORK BREAKDOWN STRUCTURE (WBS)





ENTERPRISE PROJECT STRUCTURE

	Enterprise Structure	02-Nov-17
	Project Name	
GCY	AGENCY	
Т	Transmission	
LEM	Life Extension and Modernization Program	
WNY	Western New York	
NT	NT: Niagara Transmission	
CPR 209B1	NIAGARA CPR 209 - Baseline - DD 5.31.16	
CPR 209B2	NIAGARA CPR 209 - Baseline - DD 5.31.16	
CPR 209U1	NIAGARA CPR 209 - Update 1 - DD 01.01.17	
CPR 209U2	NIAGARA CPR 209 - Update #2 - DD 07.01.17	
CPR 209U3	NIAGARA CPR 209 - Update #3 - DD 09.01.17	
CPR 209B3	NIAGARA CPR 209 - Baseline #3 - DD 5.31.16	
CPR 553B1	NIAGARA CPR 553 - Baseline #1 - DD 5.31.16	
CPR 553B2	NIAGARA CPR 553 - Baseline #2 - DD 5.31.16	
CPR 553U1	NIAGARA CPR 553 - Update #1 - DD 01.01.17	
CPR 553U2	NIAGARA CPR 553 - Update #2 - DD 07.01.17	
CPR 553U3	NIAGARA CPR 553 - Update #3 - DD 09.01.17	
CPR 553B3	NIAGARA CPR 553 - Baseline #3 - DD 5.31.16	
NNY NNY	Norhtern New York	
🔺 ST	ST: St Lawrence Transmission	
CPR 700B1	ST LAWRENCE CPR 700 - Baseline - DD 10.03.16	
CPR 700U1	ST LAWRENCE CPR 700 - Update #1 - DD 04.01.17	
CPR 1162U3	ST LAWRENCE CPR 1162 - Update #3 - DD 09.01.17	
CPR 1162B3	ST LAWRENCE CPR 1162 - Baseline #2 - DD 10.03.16	
CPR 1162U2	ST LAWRENCE CPR 1162 - Update #2 - DD 07.01.17	
CPR 1162B1	ST LAWRENCE CPR 1162 - Baseline #1 - DD 10.03.16	
CPR 1162B2	ST LAWRENCE CPR 1162 - Baseline #2 - DD 10.03.16	
CPR 1162U1	ST LAWRENCE CPR 1162 - Update #1 - DD 07.01.17 ST LAWRENCE CPR 1163 - Baseline - DD 10.03.16	
CPR 1163B2	ST LAWRENCE CPR 1163 - Baseline - DD 10.03.16 ST LAWRENCE CPR 1163 - Update #1 - DD 03.01.17	
	ST LAWRENCE CPR 1163 - Update #1 - DD 03.01.17 ST LAWRENCE CPR 1163 - Update #2 - DD 07.01.17	
CPR 1163U2	ST LAWRENCE CPR 700 - Baseline #2 - DD 07.01.17	
CPR 700B2	ST LAWRENCE CPR 700 - Baseline #2 - DD 10:03.16 ST LAWRENCE CPR 700 - Update #2 - DD 07:01.17	
CPR 700U2	ST LAWRENCE CPR 700 - Update #3 - DD 09.01.17	
CPR 700B3	ST LAWRENCE CPR 700 - Baseline #3 - DD 10.03.16	
CPR 1163U3	ST LAWRENCE CPR 1163 - Update #3 - DD 09.01.17	
CPR 1163B3	ST LAWRENCE CPR 1163 - Baseline #3 - DD 10.03.16	
XT	XT: 765 KV Transmission	
CPR 558B	MASSENA CPR 558 - Baseline - DD 6.30.2016	
CNY	Central New York	
🔥 BT	BT: BG Transmission	
CPR 1161B1	BG CPR 1161 - Baseline#1 - DD 05.31.16	
CPR 1161B2	BG CPR 1161 - Baseline#2 - DD 05.31.16	
CPR 1161B3	BG CPR 1161 - Baseline#3 - DD 05.31.16	
CPR 1161U1	BG CPR 1161 - Update#1 - DD 05.01.17	
CPR 1161U2	BG CPR 1161 - Update#2 - DD 07.01.17	
CPR 1161U3	BG CPR 1161 - Update#3 - DD 09.01.17	
MC	MC: Marcy / Clark Transmission	
CPR 557B1	CEC CPR 557 - Baseline - D.D 05.31.16	
CPR 557U3	CEC CPR 557 - Update#3 - D.D 09.01.17	
CPR 557B3	CEC CPR 557 - Baseline#3 - D.D 01.01.17	
		Page 1 of 8
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MASTER CPM SCHEDULE (SUMMARY LAYOUT)

							TLEN		ster C yout 1 -			dule	•													15-0	Oct-17 Page	
ID	Activity Name	OD Baseline Start	Baseline	Current Start	Current Finish	TF B	udgeted Total Cost	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	202	5 202)	7 2028	8 202	9 203	0 20	031 20	032	2
terprise		6147 15-Mar-10	09-Jan-34	15-Mar-10 A	22-Dec-33	0	\$748,269,924													шүшш		шішт			шінш,			ш
GENCY	614			Mar-10 A	22-Dec-33	0 9	\$748,269,924																					
ransmission		6147 15-Mar-10	09-Jan-34	15-Mar-10 A	22-Dec-33		\$748,269,924																					
ife Extension and Modernizat	on Program	6147 15-Mar-10		15-Mar-10 A	22-Dec-33		\$748,269,924																					
Western New York		3490 02-Jan-13		01-Aug-13 A			\$224,147,563				į			÷														
NT: Niagara Transmission NIAGARA CPR 209 - Update	#3 - DD 090117	3490 02-Jan-13 2721 02-Jun-14	27-May-26 04-Nov-24	01-Aug-13 A 02-Jun-14 A	27-May-26 01-Nov-24	1	\$224,147,563 \$32,309,179																					
Major Milestones		2720 02-Jun-14	01-Nov-24	02-Jun-14 A	01-Nov-24	1	\$0	•		••	•				÷	• • •	•		•									
Pre-Engineering		170 02-Jun-14	23-Jan-15	02-Jun-14 A	23-Jan-15 A		\$10,315,051																					
Engineering		2199 05-Jan-15	08-Jun-23	05-Jan-15 A	08-Jun-23	367	\$2,754,361					nr-																
Procurement Installation / Construction		2115 07-Sep-15	13-Oct-23 01-Nov-24	07-Sep-15 A 07-Sep-15 A	13-Oct-23 01-Nov-24	276	\$2,700,000			B) 															
Direct Expenses		2390 07-Sep-15 2721 02-Jun-14	01-Nov-24 04-Nov-24	07-Sep-15 A 02-Jun-14 A	01-Nov-24 01-Nov-24	1	\$11,285,000			-					-		-											
Indirect Expenses		2721 02-Jun-14	04-Nov-24	02-Jun-14 A	01-Nov-24	1	\$1,004,344							-	-	-	-	-	•									
NIAGARA CPR 553 - Update	#3 - DD 09.01.17	3490 02-Jan-13	27-May-26	01-Aug-13 A	27-May-26	0 1	\$191,838,383																					
Major Milestones		2607 31-May-16		01-Aug-13 A	27-May-26	0	\$0			* * *		* * *	* * **	***	* * *	• • • •	•	• •• •	* ** *	•					1		1	
Pre-Engineering		615 01-Aug-13	15-Dec-15	01-Aug-13 A	15-Dec-15 A		\$1,657,078						L	I	L	1	<u> </u>											
Engineering Procurement		3180 02-Jan-13 2810 23-Feb-15	19-Mar-25 28-Nov-25	17-Feb-14 A 23-Feb-15 A	19-Mar-25 28-Nov-25	248	\$16,784,613 \$38,544,307								É DE L			ui u	i i									
Procurement Installation / Construction		2810 23-Feb-15 3018 03-Nov-14	28-Nov-25 27-May-26	23-Feb-15 A 03-Nov-14 A	28-Nov-25 27-May-26		\$38,544,307 \$104,279,897							1					1									
Direct Expenses		3213 01-Aug-13		01-Aug-13 A	28-Nov-25	0	\$16,825,065				†			÷						-	••••				+		+	
Indirect Expenses		3213 01-Aug-13		01-Aug-13 A	28-Nov-25	0	\$13,747,424											-i		-							-	
Northern New York		5581 15-May-12	09-Jan-34	15-May-12 A	22-Dec-33		\$303,999,540																					
ST: St Lawrence Transmissio		5581 15-May-12		15-May-12 A	22-Dec-33	0 1	\$251,971,513																					
ST LAWRENCE CPR 1162 -	Ipdate #3 - DD 09.01.17	2792 09-Sep-16		09-Sep-16 A	24-May-27	0	\$63,703,451			x	ļ		ļ															·
Major Milestones Pre-Engineering		2792 09-Sep-16 146 09-Sep-16	24-May-27 31-Mar-17	09-Sep-16 A 09-Sep-16 A	24-May-27 31-Mar-17 A	0	\$0 \$2,854,300			_ _ _	<u> </u>	••		.	•••		•											
Engineering		2320 03-Apr-17	31-Mar-17 28-Nov-25	09-Sep-16 A	31-Mar-17 A 28-Nov-25	193	\$2,854,300											.		_								
Procurement		2253 09-Jul-18	24-Feb-27	09-Jul-18	24-Feb-27	63	\$8,843,429					Т	• m m∎n	1	iiii	1 0001	9 11 1	11911		<u>.</u>	1 11							
Construction / Installation		2472 15-Sep-17	24-May-27	01-Dec-17	24-May-27	0	\$29,731,985							, see	, and the second se	÷.		-		- 1	, nije							
Direct Expenses		2792 09-Sep-16	24-May-27	09-Sep-16 A	24-May-27	0	\$9,210,985								-							7777			1		T	
Indirect Expenses		2792 09-Sep-16	24-May-27	09-Sep-16 A	24-May-27	0	\$3,033,498				-									_	—							
ST LAWRENCE CPR 700 - U Major Milestones	odate #3 - DD 09.01.17	5631 15-May-12 5625 15-May-12		15-May-12 A 15-May-12 A	22-Dec-33 22-Dec-33	0	\$156,578,118			•••		•	••											•			••	
Pre-Engineering		1191 15-May-12		15-May-12 A	22-Dec-16 A	0	\$0			••••		•	••		T							-					••	
Engineering		3460 20-Dec-13		20-Dec-13 A	26-Mar-27	1428	\$27,171,526				·			÷						The second seco								
Procurement		4722 14-May-14	05-Jul-32	14-May-14 A	17-Jun-32	64	\$17,016,273	1	10 B	г г п	i 💶	1 11 1	j i i i∎ii	1.000	фи н н	t) n n	ոփոտ ո	113000	uğur 11	10,111	11 11111	тјпт	a (a -	11011	11 1	1 1	1	
Construction / Installation		5116 15-May-14	09-Jan-34	15-May-14 A	22-Dec-33	0	\$82,943,607							÷	÷	÷	_	-	u ÷ su s	ajan		a de constante de la constante	ania ana	-	-	_	-	-
Direct Expenses		5631 15-May-12	30-Dec-33	15-May-12 A	22-Dec-33	0	\$21,990,612				-			-		+	-	-	-	+			-	+	-			-
Indirect Expenses		5631 15-May-12	30-Dec-33	15-May-12 A	22-Dec-33	0	\$7,456,101				.			İ														
ST LAWRENCE CPR 1163 - Maior Milestones	Ipdate #3 - DD 09.01.17	5145 15-May-12	19-Feb-32	15-May-12 A	19-Feb-32	80	\$31,689,943													••			••		••	••		
Pre-Engineering		4255 30-Oct-15 406 15-May-12	19-Feb-32 19-Dec-13	15-May-12 A 15-May-12 A	19-Feb-32 19-Dec-13 A	80	\$1,809,500								1	1			1			-	- T	1.	T	-		
Engineering		2800 04-Jul-16	26-Mar-27	04-Jul-16 A	26-Mar-27	1359	\$7,073,595				i 				ė́т п	÷ 🗖	i i	_			ė,							
Procurement		3704 12-Sep-17	21-Nov-31	12-Sep-17	21-Nov-31	64	\$1,401,925							1 .	nț nu m							n i n	n ân n r	. E 110		• •		
Construction / Installation		4636 15-May-14		15-May-14 A	19-Feb-32	80	\$14,130,260		1								•			-	• • •	-	-		-	•	Ī	1
Direct Expenses		5145 15-May-12		15-May-12 A	19-Feb-32	80	\$4,541,600																					
Indirect Expenses XT: 765 KV Transmission		5145 15-May-12 1704 20-Feb-17	19-Feb-32 31-Aug-23	15-May-12 A 20-Feb-17	19-Feb-32 31-Aug-23	80	\$2,733,064 \$52,028,028								1						1		1		1			
MASSENA CPR 558 - Baseli	ne - DD 630.2016	1704 20-Feb-17 1704 20-Feb-17	31-Aug-23 31-Aug-23	20-Feb-17 20-Feb-17	31-Aug-23 31-Aug-23	0	\$52,028,028																					
Major Milestones		1704 20-Feb-17	31-Aug-23	20-Feb-17	31-Aug-23	0	\$0				٠		••															
Pre-Engineering		311 20-Feb-17	30-Apr-18	20-Feb-17	30-Apr-18	0	\$250,000																					
Engineering		1403 20-Feb-17	05-Jul-22	20-Feb-17	06-Jul-22	172	\$4,617,576					—				<u> </u>												
Procurement		1206 29-Oct-18	12-Jun-23	29-Oct-18	12-Jun-23	58	\$14,818,512					1	111															
Construction / Installation Direct Expenses		1176 28-Feb-19	31-Aug-23	28-Feb-19 20-Feb-17	31-Aug-23	0	\$21,609,800 \$8,254,614							÷													ļ.	
Indirect Expenses		1704 20-Feb-17 1704 20-Feb-17		20-Feb-17 20-Feb-17	31-Aug-23 31-Aug-23	0	\$8,254,614							1														
		1104 20-10-17	a1-Hag-25	201 20-17	armag-zo		44,477,020				:				1	1	1										i	-
	Re Re	maining Level of E	ffort	Remaining	Work	٥	Prvs U	odate								Terr		TMAG			C	. Deta	Date :	A1 De-	14			
AECC		ual Level of Effort ual Work			maining Wor											Lay	out . 11	EM Ma	ster Lay	out 1 -	summary	y; Data	Date :	01-Dec-	10			
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MASTER CPM SCHEDULE (ACTIVITIES LAYOUT)

D	Activity Name	OD B	laseline Itart	Baseline Finish	Current Star	Current Fini	sh TF	Budgeted Tota Cor	1 2014 z	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028		2030		2032	- 1
CNT-PBF-O-E24F	End 2024 Fall Outage	0		01-Nov-24		01-Nov-24	. 0	S	٥										\$									4
Pre-Engineering				23-Jan-15		23-Jan-15		\$10,315,05	1				<u> </u>		<u> </u>	<u> </u>			<u> </u>	<u> </u>		<u> </u>	<u> </u>	<u> </u>				_
CNT-PBF-PEN Engineering	Pre-Engineering		2-Jun-14 5-Jan-15	23-Jan-15 08-Jun-23	02-Jun-14 A 05-Jan-15 A	23-Jan-15		\$10,315,05	1	-																	1	1
Gardenville 180			5-Jan-15	01-Jul-15	05-Jan-15 A			\$92,00	0																		1	
CNT-PBF-E-GAR180	Gardenville 180 NYPA Engineering	128 0	5-Jan-15	01-Jul-15	05-Jan-15 A	01-Jul-15	×	\$92,00	0																			
Packard 195		128 0	5-Jan-15	01-Jul-15	05-Jan-15 A	01-Jul-15	λ.	\$103,10	0																		1	1
CNT-PBF-E-PKD195	Packard 195 NYPA Engineering	128 0	5-Jan-15	01-Jul-15	05-Jan-15 A	01-Jul-157	4	\$103,10	0	—													I	Ī				Ï
Packard 194		128 0	5-Jan-15	01-Jul-15	05-Jan-15 A	01-Jul-15	λ.	\$109,26	1																		1	
CNT-PBF-E-PKD194	Packard 194 NYPA Engineering	128 0	5-Jan-15	01-Jul-15	05-Jan-15 A	01-Jul-157	4	\$109,26	1																			
AT4 Relays		_		01-Jul-15		01-Jul-15		\$100,00	0																		i	1
CNT-PBF-E-AT4REL	AT4 Relays NYPA Engineering	128 0	5-Jan-15	01-Jul-15	05-Jan-15 A	01-Jul-15	•	\$100,00	0																			
Packard 191 CNT-PBF-E-PKD191	Packard 191 NYPA Engineering		0-Jun-15 0-Jun-15	04-Dec-15 04-Dec-15	10-Jun-15 A	04-Dec-15 04-Dec-15		\$100,00 \$100,00	0								1					1	İ	Ť				1
Green as reprinted in	. Source for the regulating		- wardt 10	ST-2-80-10	re-sure to A	04-040-10		g 100,00	1																		1	ł
Packard 193				19-Feb-16		19-Feb-16		\$100,00			L																	i
CNT-PBF-E-PKD193	Packard 193 NYPA Engineering	128 2	6-Aug-15	19-Feb-16	26-Aug-15 A	19-Feb-16	A	\$100,00	0		-																	
Pakeard 192 CNT-PBF-E-PKD192	Packard 192 NYPA Engineering			10-Oct-16 10-Oct-16		03-Jul-17		\$100,00 \$100,00	0	+													+	÷				+
Mountain 121 CNT-PBF-E-MTN121	Mountain 121 NYPA Engineering		4-Apr-16 4-Apr-16	10-Oct-16 10-Oct-16	14-Apr-16 A	25-Nov-16 25-Nov-16		\$100,00	0																		1	1
																											1	1
Gibson 197 Secondary CNT-PRE-E-GIR197	Citere (CT Consider 1970)	_		19-May-17 19-May-17			_	\$100,00	0																		1	1
CN1-PBF-E-GIB19/	Gibson 197 Secondary NYPA Engineering	100 0	2-Jan-17	19-May-17	U2-Jan-17 A	19-May-17	A	\$100,00	0																			ļ
Lockport 102			2-Feb-17					\$100,00	0	1	1		1	[1	1		1	1	1	1	Ţ	T				1
CNT-PBF-E-LKP102	Lockport 102 NYPA Engineering	128 2	2-Feb-17	18-Aug-17	03-Jul-17 A	27-Dec-17	22	\$100,00	0																		1	1
Packard 62		128 2	0-Sep-17	16-Mar-18	20-Sep-17	16-Mar-18	180	\$100.00																			1	1
CNT-PBF-E-PKD062	Packard 62 NYPA Engineering			16-Mar-18	20-Sep-17			\$100,00	0			-	<u>-</u>															
Lockport 120 CNT-PBF-E-LKP120	Lockport 120 NYPA Engineering			17-Aug-18			_	\$100,00 \$100,00		ļ		ļ	ļ		ļ	ļ	ļ			ļ		ļ	ļ	Ļ		, .		Ļ
GNT-PBP-E-LWP120	Looport 120 NTPA Engineering	128 2	1-190-18	17-Aug-18	21-Feb-18	17-Aug-18	120	\$100,00																			1	1
Packard 61 CNT-PBF-E-PKD061	Packard 61 NYPA Engineering			07-Jun-19 07-Jun-19	12-Dec-18 12-Dec-18			\$100,00 \$100.00	0																		1	
	. Addition of the tradition ing																											l
Gibson 198 CNT-PBF-E-GIB198	Gibson 198 NYPA Engineering			13-Sep-19 13-Sep-19	20-Mar-19 20-Mar-19	13-Sep-19		\$100,00 \$100,00	0																			
AT1 Secondary		128 2	6-Jun-19	20-Dec-19	26-Jun-19	20-Dec-19	225	\$100,00	0	ł	·		+				·			+		·	+	÷				÷
CNT-PBF-E-AT1SEC	AT1 Secondary NYPA Engineering			20-Dec-19	26-Jun-19	20-Dec-19		\$100,00	0																			
PCB 2008 Relays				20-Dec-19				\$100,00	0																		1	
CNT-PBF-E-PC2008	PCB 2008 Relays NYPA Engineering	128 2	6-Jun-19	20-Dec-19	26-Jun-19	20-Dec-19	225	\$100,00	0																		1	
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	Actu	lava I Ici	of Effort	A	Prvs Update												l -		EM Mast					_				

REQUEST FOR PROGRESS UPDATES LAYOUT

ity ID	Activity Name	OD	Start	Finish	Total Float	Budgeted Total Cost	Physical %	Actual Star	Finish	Expected Finish	Nov	Dec	Jan	Feb	Mar	Apr M	lay Ju	2018 n Jul	Aug	Sep	Oct Nov	Dec	2019 Jan
nterprise			22-Feb-17 A		1549			22-Feb-17		31-Oct-19													
Power Projects			22-Feb-17 A			\$11,509,824		22-Feb-17		31-Oct-19													
New York Power Authorit	v		22-Feb-17 A	23-Dec-19	1549	\$11,509,824		22-Feb-17		31-Oct-19													
Transmission Life Extension and Modern	institut Brooster	739	22-Feb-17 A 22-Feb-17 A	23-Dec-19 23-Dec-19	1549 1549	\$11,509,824 \$11,509,824		22-Feb-17 22-Feb-17		31-Oct-19 31-Oct-19													
Western New York	ization Program		22-Feb-17 A	23-Dec-19 23-Dec-19	1549	\$11,509,824		22-Feb-17		31-Oct-19													
Niagra Transmission			22-Feb-17 A			\$11,509,824		22-Feb-17		31-Oct-19													
	ate February 2018 - DD 03.01.18	739	22-Feb-17 A	23-Dec-19	1549	\$11,509,824		22-Feb-17	_	31-Oct-19													
Major Milestones CNT-PAO-01-18-2	2018: Milestone 2 - Bay 19 Delivery (1917, 1921, 1915, 1911, 1913, 1903)	0	01-Mar-18	26-Mar-18*	-27	\$0 \$0	0%							۰	•								
Outage Milestones CNT-PAO-01-E17F	End 2017 Fall Outage	17 0	01-Mar-18	26-Mar-18 01-Mar-18*	-28	50 \$0	0%						٠		•								
CNT-PAO-01-S18S	Start 2018 Spring Outage	0	26-Mar-18*		0	\$0	0%								\$								
Engineering		702	22-Feb-17 A	31-Oct-19	64	\$672,185		22-Feb-17		31-Oct-19													
Bay 17 CNT-PAO-12-B17-100	Bay 17 NYPA Engineering (2018): Summary Cost	193	20-Sep-17 A	15-Jun-18	0	\$247,540	60%	20-Sep-17		06-Mar-18	=												
CNT-PAO-12-B17-140	Bay 17 NYPA Engineering (2018): 60% Design Review	30	24-Jan-18 A	06-Mar-18	0	\$0	95%	24-Jan-18		06-Mar-18													
CNT-PAO-12-B17-150	Bay 17 NYPA Engineering (2018): 90% Design	30	07-Mar-18	17-Apr-18	0	\$0	0%																
CNT-PAO-12-B17-160	Bay 17 NYPA Engineering (2018): 90% Design Review	30	18-Apr-18	29-May-18	0	\$0	0%																
CNT-PAO-12-B17-170	Bay 17 NYPA Engineering (2018): IFC	13	30-May-18	15-Jun-18	0	\$0	0%																
Bay 20 (AT1 Section) CNT-PAO-12-B20AT11	Bay 20 (AT1 Section) NYPA	542 542	04-Oct-17 A 04-Oct-17 A	31-0-1-19 31-Oct-19	64 64	\$162,803	20%	04-Oct-17 04-Oct-17		31-Oct-19 31-Oct-19													
	Engineering																						
Bay 20 (AT2 Section) CNT-PAO-12-B20AT2-1	1 Bay 20 (AT2 Section) NYPA Engineering (2018): Summary Cost	702 368	22-Feb-17 A 22-Feb-17 A	31-Oct-19 20-Jul-18	64 0	\$213,278 \$103,278	85%	22-Feb-17 22-Feb-17		31-Oct-19	⊨												
CNT-PAO-12-B20AT2-1	5Bay 20 (AT2 Section) NYPA Engineering (2020)	542	04-Oct-17 A	31-Oct-19	64	\$100,000	20%	04-Oct-17		31-Oct-19	-												
CNT-PAO-12-B20AT2-1	7 Bay 20 (AT2 Section) NYPA Engineering (2018): 90% Design	75	01-Dec-17 A	15-Mar-18	0	\$0	95%	01-Dec-17		15-Mar-18													
CNT-PAO-12-B20AT2-1	8 Bay 20 (AT2 Section) NYPA Engineering (2018): 90% Design Review	75	16-Mar-18	28-Jun-18	0	\$0	0%																
Equipment Procureme	nt Package	174	31-May-17 A	29-Mar-18	327	\$58,564		31-May-17		29-Jan-18													
Auto Transformer #1 CNT-PAO-12-AUTR01-	2AT1 Bid Rev & Equip Contract Award		31-May-17 A 31-May-17 A		327 327	\$58,564 \$58,564	95%	31-May-17 31-May-17		29-Jan-18 29-Jan-18													
Procurement		50	26-Mar-18	01-Jun-18	406	\$267,866					(******												
SPARE EQUIPMENT	115KV BREAKER (SPARE)	1	01-Jun-18 01-Jun-18*	01-Jun-18 01-Jun-18	403 406	\$118.222 \$118,222	0%										I						
	Actual Level of Actual Level of Comparison of the termination of terminatio of terminatio of termination of termin	Effort	♦ ♦№ ♦ ♦₽	ritical Remaini filestone rvs Update rvs Update	ing Work									F	ilter : T		rs: CPR5	53_Exclu		-	Data Date FU Filter_C		8

METHODS OF MEASURING WORK PROGRESS

- AACEI proposes six methods:
 - Units Completed
 - Incremental Milestone
 - Start/Finish
 - Supervisor Opinion
 - Cost Ratio
 - Weighted or Equivalent Units
- Establish 'Rules of Credit' tailored to your project
- "Soft" Effort: Many a times physical percent complete is subjective. One may tend to be over optimistic / pessimistic.
- Apply Reverse Psychology
 - Apply Physical Percent Complete
 - Calculate ETC
 - Ask yourself-Is ETC sufficient to complete the work?
 - Assess and re-apply physical percent complete
 - Last check After applying the Actuals



T-LEM Program – Physical Percent Complete/Earned Value Credit **Rules**

Procurement

Deliver Equipment on Site:	85%
Acceptance Testing on Site:	15%

Construction

PROGRAM RULES OF **CREDIT**

constituction		
By Contractor:	Based on progress re	eported on the Schedule of Values / Payment Line Items reflected in Contractor's payment request
By Owner:	Assessment by RE or	n the 'Physical' percent complete of construction activity
Design		
Activity shorter t	han 45 Work days:	50%/50% (start/finish)
Activity greater the milestones:	nan 45 Work days:	Assessment by PM/Design Task Leader on the design activity based on following incremental
Issue for I	n-House Review:	70%
Issue for (Owner review:	80%

Issue for construction bid package: 100%

ACTUAL
COST
ANALYSIS

Resource Name	🔹 Cost Elei 🔹	CE Name 🔹	Name of offsetting a 🔽 💈	013 - 💈	2014 🖃	2015 🖃	2016 🖃	2017 🔄	Jan 2018 🛛 💌 F	eb 2018 🔄 M	4ar 2018 🔄 i	Apr 2018 🛛 💌 M	4ay 2018 🔄 (Grand Top	💌 ¥BS	· Org 💽	· C(• e
											· · · ·						
	810129	Project Mgmt-S/T			52720.22	32644.14								8	54.36 Pre-Engineering		CNT-PAO-11-PRE1.H623.810129.
direct	850003	Capital Indirect OIH		10859.61	23598.71	44161.71								7	20.03 Pre-Engineering		CNT-PAO-11-PRE1.H945.850003.
ieneral Maint	810028	General Maint-S/T		270.56											70.56 Pre-Engineering		CNT-PAO-11-PRE1.N310.810028.
witchyard Maint	683100	Design Eng-Consult	AEIS LLC												0 Pre-Engineering		CNT-PAO-11-PRE1.N332.683100.AEIS
nstrument & Control	810030	l&C-S/T													0 Pre-Engineering		CNT-PAO-11-PRE1.N400.810030.
Design & Drafting	810014	Drafting-O/T													0 Pre-Engineering		CNT-PAO-11-PRE1.N530.810014.
	810015	Drafting-S/T			248.67	76.2									24.87 Pre-Engineering		CNT-PAO-11-PRE1.N530.810015.
PM-Western NY	661400	Other Business Meals	EVERYDAY GOURMET					390.6						_	890.6 Indirect		CNT-PAO-18-DIR1.H622.661400.EVE
101 11 22 2011 121	661400	other basiness rite as	FAVORITE'S PIZZERIA					000.0	272.5						272.5 Indirect		CNT-PAO-18-DIR1.H622.661400.FAV
	672100	Copt Stud abour/Mat	BUFFALO ENVIRONMENT	TÅI		4317.31			212.0			1588.63			05.94 Direct	Environmental	CNT-PAO-18-DIR1.H622.672100.BUF
		Construct Mgt-Consul			39089.68	123474.35	31360.51					1000.00		19	24.54 Direct	Consultant	CNT-PAO-18-DIR1.H622.683200.NPT
	683200		RCM TECHNOLOGIES INC	C.	00000.00	120111.00	01000.01	4572.8							572.8 Direct	Consultant	CNT-PAO-18-DIR1.H622.683200.RCM
PM-Northern NY	671200		HAROLD MOORE & ASSO		NC	8800		1012.0							8800 Engineering	Consultant	CNT-PAO-18-DIR1.H623.671200.HAF
	683100		Misc C&A-Liab-Hgtrs			-58000									8000 Accrual		t CNT-PAO-18-DIR1.H623.683100.Miso
	683100	Debigit Eng Conbak	RCM TECHNOLOGIES INC	C.		29565									9565 Engineering	Consultant	CNT-PAO-18-DIR1.H623.683100.RCM
	683200	Construct Mat-Consul	CITIBANK BTA CC-CONT		AIR CHG	20000		1376.2							376.2 Engineering	Consultant	CNT-PAO-18-DIR1.H623.683200.CITI
	683200		Misc C&A-Liab-Hgtrs		58000			38116	-38116						8000 Accrual	Direct-Consultant	CNT-PAO-18-DIR1.H623.683200.Mis/
	683200		NPTS INC			18286.43	31852.41							5	38.84 Direct	Consultant	CNT-PAO-18-DIR1.H623.683200.NPT
	683200		RCM TECHNOLOGIES INC	С	419152.54	1455344.35	509069.53	63634.11						244	0.53 Direct	Consultant	CNT-PAO-18-DIR1.H623.683200.RCM
PM-Transmission	682300		Mise C&A-Liab-Hgtrs	-		545000	-545000								0 Accrual	Direct-Consultant	CNT-PAO-18-DIR1.H626.682300.Mise
	682300		RCM TECHNOLOGIES INC	C			89870								9870 Direct	Consultant	CNT-PAO-18-DIR1.H626.682300.RCM
	683100		AECOM USA INC	-				101583.61		7033	31660.67			14	77.28 Engineering	Consultant	CNT-PAO-18-DIR1.H626.683100.AEC
	683100		Mise C&A-Liab-Hqtrs								62429.44	-24922.32	75376.02	11	83.14 Accrual		t CNT-PAO-18-DIR1.H626.683100.Misc
	683100		RCM TECHNOLOGIES INC	C			5400								5400 Engineering	Consultant	CNT-PAO-18-DIR1.H626.683100.RCM
	683200	Construct Mgt-Consul		-			125309.37	59471.64						15	81.01 Direct	Consultant	CNT-PAO-18-DIR1.H626.683200.AEC
	683200		Construct Mgt-Consul					5694.03							94.03 Direct	Consultant	CNT-PAO-18-DIR1.H626.683200.Con
	683200		Misc C&A-Liab-Hgtrs				120000	263054.53	-277869.53	-105185	67176.34	-67176.34			0 Accrual	Direct-Consultant	CNT-PAO-18-DIR1.H626.683200.Mise
	683200		NPTS INC				2714.28								14.28 Direct	Consultant	CNT-PAO-18-DIR1.H626.683200.NPT
	683200		RCM TECHNOLOGIES INC	C			653765.37	534454.2	303059.01	39710.41	54638	131111.31	53047.41	176	85.71 Direct	Consultant	CNT-PAO-18-DIR1.H626.683200.RCM
	689900		BUREAU VERITAS NORTH		CA INC		5592.17								92.17 Direct	Consultant	CNT-PAO-18-DIR1.H626.689900.BUF
	810129	Project Mgmt-S/T						4699.52	9781.85	17003.35	14377.35	14902.55	7418.45	6	33.07 Direct	NYPA	CNT-PAO-18-DIR1.H626.810129.
ndirect	850003	Capital Indirect OIH			27524.83	108269.3	52893.75	56729.67	672.62	-1076.67	11700.51	2863.96	6958.06	26	36.03 Indirect		CNT-PAO-18-DIR1.H945.850003.
Design & Drafting	810014	Drafting-O/T				15681.6	8267.28	5454.34	650.98	1301.96	3728.34	1775.4	739.75	3	99.65 Engineering	NYPA	CNT-PAO-18-DIR1.N530.810014.
	810015	Drafting-S/T			34254.31	22917.15	19674.48	52091.97	15673.62	18602.86			2579.48	16	3.87 Engineering	NYPA	CNT-PAO-18-DIR1.N530.810015.
Protection & Control	683100	Design Eng-Consult	ROTATOR STAFFING SEI	BVICES IN	IC .		1278.2								278.2 Engineering	Consultant	CNT-PAO-12-ENG1.H605.683100.RO
Protection & Control	810021	Engng Support - O/T	NOTATON STAFFING SEI	NTIGES IN			1210.2	214.35							14.35 Engineering	NYPA	CNT-PA0-12-ENGI.H605.810021
	810022	Engng Support - S/T					77487.03	120120	7826.91					20	33.94 Engineering	NYPA	CNT-PA0-12-ENGI.H605.810022.
Power System Equip	641100	Tools & Equipment	Misc Clearing				11401.00	642.99	1020.31					20	2.99 Procurement	NICA	CNT-PA0-12-ENGI.H600.610622.
ower ogstern Equip	810022	Engng Support - S/T	iniso cleaning				181229.72	245621.21	16593.75					44	14.68 Engineering	NYPA	CNT-PA0-12-ENGI.H607.64100.0418 CNT-PA0-12-ENGI.H607.810022.
Sus Civil Geo Hudro	683100		ROTATOR STAFFING SEI	BVICES IN	IC.		3240	273021.21	10000.10						3240 Engineering	Consultant	CNT-PAO-12-ENGI.H608.683100.RO
ogo oran deo rigaro	810022	Engng Support - S/T	no monorar indiaci				60406.18	55042.11	4106.97					- 11	55.26 Engineering	NYPA	CNT-PA0-12-ENGI.H608.80000.H0
Design & Drafting	671200	Design & Drafting	AEROTEK ENERGY SERV	ICES			9610.56	000T2.II	100.31						10.56 Engineering	Consultant	CNT-PA0-12-ENGI.H608.671200.AEF
and go to brokening	671200	a congress conserving	L J GONZER ASSOCIATES				71945.54	7546						7	91.54 Engineering	Consultant	CNT-PAO-12-ENG1.H609.671200.L J
	671200		ROTATOR STAFFING SEI		IC.		46190.82	1010							30.82 Engineering	Consultant	CNT-PA0-12-ENGI.H603.671200.E 0
	810014	Drafting-O/T					347.5								347.5 Engineering	NYPA	CNT-PAO-12-ENG1.H609.810014.
	810015	Drafting-S/T					462742.63	668719.36	50657.42					- 11	19.41 Engineering	NYPA	CNT-PAO-12-ENGI.H609.810015.
Mechanical Engng	810035	Mech Engineer-S/T					8015.42	10247.27	30031.72						52.69 Engineering	NYPA	CNT-PA0-12-ENGI.H603.810015.
Metering	810039	Metering-S/T					6789.91	6160.29						- 1	350.2 Engineering	NYPA	CNT-PAO-12-ENGI.H613.810039.
PM-Western NY	661400		FAVORITE'S PIZZERIA			60.5	248.5	0100.23							309 Indirect	NU 0	CNT-PA0-12-ENGI.H613.810033. CNT-PA0-12-ENGI.H622.661400.FA
ist a esterning i	810106	Pgen Admiin-S/T				00.0	10615.18								15.18 Direct	NYPA	CNT-PAO-12-ENGI.H622.801400.PA
PM-Northern NY	683200		RCM TECHNOLOGIES INC	r		574186.53	136068							71	54.53 Direct	Consultant	CNT-PA0-12-ENGI.H623.683200.RC
M-Transmission	674600	Vaste Removal	Misc C&A-Liab-Hgtrs			31 100.33	130066								0 Direct		tc CNT-PAO-12-ENGI.H626.674600.Mis
INF FIGUSTUSSION	682100		Mise C&A-Liab-Hetrs					0							0 Accrual	Direct-Consultant	CNT-PAO-12-ENGI.H626.682100.Mis
	682100	outside Couriser Cons	RCM TECHNOLOGIES INC	c				59640							9640 Direct	Consultant	CNT-PAO-12-ENGI.H626.682100.MIS
	683100	Decian Eng Concult	Construct Mat-Consul	U				128218							8218 Direct	Consultant	CNT-PAO-12-ENGI.H626.683100.Cor
	683100 683100							128218									
			Cont Srv-Labour/Mat												0000 Engineering	Consultant	CNT-PAO-12-ENG1.H626.683100.Cor
	683100		Design Eng-Consult					19440	45004 5	440.0 -	0046.5	00055			9440 Engineering	Consultant	CNT-PAO-12-ENG1.H626.683100.Des
	683100		Mise C&A-Liab-Hetrs	-			FACTO	5158.5	45661.5	11024	-39189	-22655	04700	40.0	0 Accrual		t CNT-PAO-12-ENG1.H626.683100.Mis
	683100		RCM TECHNOLOGIES INC	L I			51013	1468509.68	18520	15820	35484		34790	162	6.68 Engineering	Consultant	CNT-PA0-12-ENG1.H626.683100.RCI
	683200	Construct Mat-Consul	Construct Mat-Consul					100000							000 Engineering	Consultant	CNT-PAO-12-ENG1.H626.683200.Co



ACTUAL COST ANALYSIS

				÷								
Row Labels	Sum of 2013	Sum of 2014	Sum of 2015	Sum of 2016	Sum of 2017	Sum of Jan 2018	Sum of Feb 2018	Sum of Mar 2018	Sum of Apr 2018	Sum of May 2018	Sum of Grand Total	Sum of till Apr1
Bre-Engineering	\$234,109.38	\$495,572.94	\$927,395.97								\$1,657,078.29	\$1,657,078.2
Engineering		\$34,254.31	\$78,950.29	\$1,148,387.07	\$2,911,251.66	\$132,354.28	\$172,445.93	\$225,604.02	\$145,222.81	\$167,392.47	\$5,015,862.84	\$4,848,470.3
NYPA		\$34,254.31	\$40,585.29	\$938,633.80	\$1,311,646.17	\$113,834.28	\$149,592.93	\$156,204.31	\$144,241.37	\$130,096.23	\$3,019,088.69	\$2,888,992
Consultant			\$38,365.00	\$209,753.27	\$1,599,605.49	\$18,520.00	\$22,853.00	\$69,399.71	\$981.44	\$37,296.24	\$1,996,774.15	\$1,959,477
Procurement		\$196.46	\$8,304,595.99	\$2,987,184.39	\$950,379.54	\$477,978.80	\$404,677.30	\$17,958.63	\$61,988.61	(\$156,931.70)	\$13,048,028.02	\$13,204,959.7
Construction		\$33,752.04	\$5,191,169.12	\$6,907,025.35	\$10,862,053.00	\$2,282,440.53	\$582,333.49	\$642,287.48	\$398,305.59	\$61,921.15	\$26,961,287.75	\$26,899,366.0
NYPA		\$30,102.04	\$266,738.66	\$509,341.35	\$358,594.38	\$33,928.48	\$34,554.69	\$82,046.28	\$132,497.04	\$61,921.15	\$1,509,724.07	\$1,447,802
Contractor		\$3,650.00	\$4,924,430.46	\$6,397,684.00	\$10,503,458.62	\$2,248,512.05	\$547,778.80	\$560,241.20	\$265,808.55		\$25,451,563.68	\$25,451,563.
🖲 Direct		\$486,717.42	\$2,418,735.39	\$2,802,662.48	\$1,348,039.01	\$345,607.41	\$105,162.43	\$117,456.48	\$177,206.39	\$109,027.02	\$7,910,614.03	\$7,801,587.0
🖲 Indirect		\$39,146.02	\$1,079,568.15	\$479,873.47	\$951,848.38	\$29,125.81	\$2,943.96	\$46,513.42	\$15,632.46	\$89,265.67	\$2,733,917.34	\$2,644,651.0
Accrual		\$228,000.00	\$5,559,700.00	(\$4,262,500.00)	\$2,943,231.23	(\$2,661,587.43)	(\$1,212,770.66)	(\$80,069.24)	(\$470,074.02)	\$1,603,904.54	\$1,647,834.42	\$43,929.8
Construction-Contractor		\$170,000.00	\$3,486,200.00	(\$2,726,700.00)	\$2,332,537.15	(\$2,202,548.35)	(\$527,259.66)	(\$279,711.02)	(\$252,518.12)	\$905,529.20	\$905,529.20	\$0.
Direct-Consultant		\$58,000.00	\$545,000.00	(\$325,000.00)	(\$2,596,866.62)	\$2,482,051.62	(\$105,185.00)	\$67,176.34	(\$60,753.58)	(\$6,422.76)	\$58,000.00	\$64,422
Engineering-Consultant			(\$58,000.00)		\$5,158.50	\$45,661.50	\$11,024.00	\$23,240.44	(\$47,577.32)	\$75,376.02	\$54,883.14	(\$20,492
Procurement			\$1,586,500.00	(\$1,210,800.00)	\$3,202,402.20	(\$2,986,752.20)	(\$591,350.00)	\$109,225.00	(\$109,225.00)	\$629,422.08	\$629,422.08	\$0
Grand Total	\$234,109.38	\$1,317,639.19	\$23,560,114.91	\$10,062,632.76	\$19,966,802.82	\$605,919.40	\$54,792.45	\$969,750,79	\$328,281.84	\$1,874,579.15	\$58,974,622.69	\$57,100,043.



PROJECT COST STATUS SUMMARY

			CPR 55	3: I	Niagara - Ear	ne	d Value Rep	or	t - May 2018	3			
DESCRIPTION	PL/	ANNED BUDGET TO DATE (PB)	RNED VALUE O DATE (EV)	AC	TUAL COST TO DATE (AC)	VA	COST ARIANCE (CV)		SCHEDULE ARIANCE (SV)	TOTAL AUTHORIZED BUDGET (TAB)		ESTIMATE AT OMPLETION (EAC)	VARIANCE AT COMPLETION (VA
iterprise													
Power Projects													
New York Power Authority	,												
Transmission													
Life Extension and Mo	dernizati	on Program											
Western New York													
Niagara Transmiss	ion (NT)										_		
CPR 553	\$	51,305,810	\$ 50,496,855	\$	58,974,623	\$	(8,477,768)	\$	(808,954)	\$ 191,838,383	\$	191,838,383	\$ -
Pre-Engine	erin \$	1,657,078	\$ 1,657,078	\$	1,657,078	\$	(0)	\$	-	\$ 1,657,078	\$	1,657,078	
Engineerin	ş \$	6,833,196	\$ 6,773,084	\$	5,070,746	\$	1,702,338	\$	(60,112)	\$ 16,784,613	\$	16,784,613	
NYPA	\$	2,942,586	\$ 2,882,474	\$	3,019,089	\$	(136,615)	\$	(60,112)	\$ 12,893,527	\$	12,893,527	
Consulta	int \$	3,890,610	\$ 3,890,610	\$	2,051,657	\$	1,838,953	\$	-	\$ 3,891,086	\$	3,891,086	
Procuremen	it \$	11,806,028	\$ 11,406,028	\$	13,677,450	-	(2,271,422)		(400,000)	\$ 38,544,307	\$	38,544,307	
NYPA	\$	11,806,028	\$ 11,406,028	\$	13,677,450	`\$	(2,271,422)	\$	(400,000)	\$ 38,544,307	\$	38,544,307	
Constructio	n \$	22,776,543	\$ 22,826,221	\$	27,866,817	\$	(5,040,596)		49,678	\$ 104,279,897	\$	104,279,897	
NYPA	\$	2,586,260	\$ 2,559,472	\$	1,509,724	\$	1,049,748	\$	(26,788)	\$ 6,638,785	\$	6,638,785	
Contract	or \$	20,190,283	20,266,749		26,357,093	\$	(6,090,344)		76,466		-	97,641,112	
Direct	\$	4,347,123	\$ 4,304,039	\$	7,968,614	`\$	(3,664,575)		(43,084)		\$	16,825,065	
Indirect	\$	3,885,841	\$ 3,530,405	\$	2,733,917	\$	796,488	\$	(355,436)	\$ 13,747,424	\$	13,747,424	
🖈 Includes Acc	ruals from	m SAP.					CPI		SPI				
							0.86		0.98				

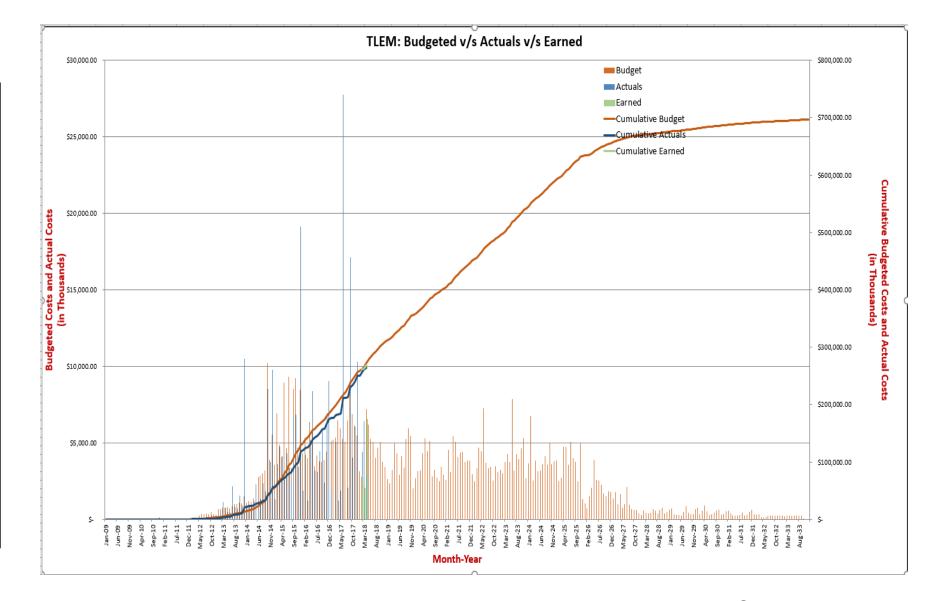


EARNED VALUE SUMMARY

DESCRIPTION		INED BUDGET D DATE (PB)	EARNED V DATE			UAL COST TO DATE (AC)	COST	VARIANCE (CV)		CHEDULE RIANCE (SV)		TOTAL JTHORIZED DGET (TAB)	ESTIMATE AT COMPLETION (EAC)	VARIANCE AT COMPLETION (VAC)	% COMPLI (EV/TAE
rise															
York Power Authority															
insmission	1														
ife Extn & Modernization Program	ls _	276,750,758	\$ 27	2,642,434	\$	266,850,830	\$	5,791,604	\$	(4,108,325)	\$	696,241,896	\$ 696,359,816		39
Niagara	\$	69,177,695	\$ 6	8,370,840	\$	76,998,405	\$	(8,627,565)	\$	(806,856)	\$	224,147,563	\$ 224,147,563		30
CPR 553	\$	51,305,810	\$ 5	0,496,855	\$	58,974,623	\$	(8,477,768)	\$	(808,954)	\$	191,838,383	\$ 191,838,383		26
CPR 209	\$	17,871,886	\$ 1	7,873,985	\$	18,023,782	\$	(149,797)	\$	2,099	\$	32,309,179	\$ 32,309,179		55
Clark Energy Center	\$	17,458,340	\$ 1	5,745,258	\$	13,658,488	\$	2,086,770	\$	(1,713,082)	\$	39,226,290	\$ 39,226,290		4(
CPR 557	\$	17,458,340	\$ 1	5,745,258	\$	13,658,488	\$	2,086,770	\$	(1,713,082)	\$	39,226,290	\$ 39,226,290		4(
Massena	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -		
CPR 558	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$-		
St Lawrence	\$	64,602,769	\$ E	4,293,888	\$	58,788,183	\$	5,505,705	\$	(308,880)	\$	251,971,513	\$ 251,971,513		2
CPR 700	\$	52,118,609	\$ 5	3,339,119	\$	51,815,555	\$	1,523,565	\$	1,220,510	\$	156,578,118	\$ 156,578,118		3
CPR 1162	\$	5,914,154	\$	4,644,845	\$	4,321,235	\$	323,611	\$	(1,269,309)	\$	63,703,451	\$ 63,703,451		
CPR 1163	\$	6,570,005		6,309,924	\$	2,651,394	\$	3,658,530	\$	(260,081)	\$	31,689,943	\$ 31,689,943		1
Blenhelm Gilboa	\$	4,235,585		3,755,233	\$	3,501,040	\$	254,194	\$	(480,352)	\$	10,997,660	\$ 10,997,660		3
CPR 1161	\$	4,235,585	\$	3,755,233	\$	3,501,040	\$	254,194	\$	(480,352)	\$	10,997,660	\$ 10,997,660		34
Other	\$	121,276,369	\$ 12	0,477,214	\$	113,904,714	\$	6,572,500	\$	(799,155)	\$	169,898,871	\$ 170,016,790		7
CPR 1164	\$	3,983,574	\$	4,070,302	\$	3,165,889	\$	904,413	\$	86,728	\$	37,583,457	\$ 37,583,457		10
CPR 604	\$	22,461,116	\$ 2	2,801,416	\$	20,927,219	\$	1,874,198	\$	340,300	\$	25,334,907	\$ 25,334,907		9
CPR 804	\$	13,584,914	\$ 1	3,571,329	\$	13,026,240	\$	545,089	\$	(13,585)	\$	13,584,914	\$ 13,584,914		9
CPR 460/1527	\$	39,642,820	\$ 3	8,593,446	\$	34,981,096	\$	3,612,349	\$	(1,049,374)	\$	43,217,026	\$ 43,217,026		8
CPR 1019	\$	2,623,954	\$	2,460,729	\$	2,692,247	\$	(231,518)	\$	(163,225)	\$	2,958,121	\$ 2,958,121		8
CPR 895	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$ -		
CPR 1134	\$	-	S	-	s	-	S	-	S	-	S	8,240,453	\$ 8,240,453		
CPR 675	\$	2,417,906	\$	2,417,906	\$	2,502,806	\$	(84,899)	\$	-	\$		\$ 2,502,806		10
CPR 792	s	548,424	\$	548,424	\$	548,424	\$		\$	-	\$		\$ 548,424		10
CPR 1138	S	230,624	\$	230,624	\$	230,624	\$	-	\$	-	\$,	\$ 230,624		10
CPR 793	s	813,176	+	813,176		827,287	s	(14,111)	s	-	s	,	\$ 813,176		10
CPR 29	s	385,787	s	385,787	s	385,787	s	-	ŝ	-	s	385,787	\$ 385,787		10
CPR 799	s	3,374	s	3,374	s	3,374	s	-	s	-	s	,	\$ 3,374		10
CPR 36	s	-	s	-	s	-	s	-	ŝ	-	s	-	\$ -		
CPR 1137	s	31,905,015	\$ 3	1,905,015	s	31,938,036	s	(33,020)	ŝ	-	ŝ	31,905,015	\$ 31,938,036		10
CPR 1136	ŝ	2,675,686		2,675,686	ŝ	2,675,686	s	-	ŝ	-	Š		\$ 2,675,686		10
	Ŧ	2,07.5,000	-	2,575,656	÷	2,075,000	*		*	CDI	~		2,073,000		10
This report does not include CPR 5										CPI		SPI			

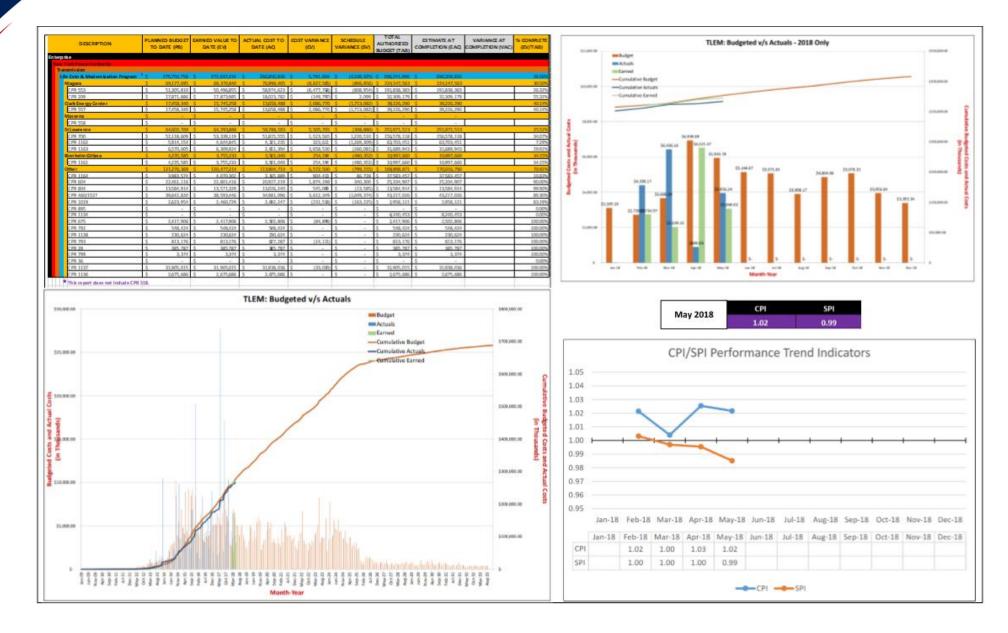


PROGRAM COST CURVE





PROGRAM DASHBOARD



FISCAL BUDGETS

By WBS

															YEAR				
WBS	Totals	20	010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Pre-Engineering	\$ 1,657,07	3.02 \$-	Ş	<u>}-</u>	Ş-	\$ 282,915.76	\$ 703,247.74	\$ 670,914.52	\$-	\$-	\$-	ş -	\$-	\$ -	ş -	\$-	\$-	\$-	\$ -
Engineering	\$ 16,784,61	2.43 \$-	\$	S-	Ş-	ş -	\$ 649,456.32	\$ 1,725,811.34	\$ 2,722,134.67	\$ 1,427,621.38	\$ 1,090,427.08	\$ 1,146,706.00	\$ 996,224.13	\$ 1,316,866.88	\$ 908,630.22	\$ 2,570,020.48	\$ 1,772,476.43	\$ 458,237.50	\$ -
NYPA	\$ 12,893,52	5.48 \$-	\$	S-	Ş-	ş -	\$ 477,007.10	\$ 403,698.55	\$ 395,411.49	\$ 1,358,296.76	\$ 1,090,408.36	\$ 1,146,248.58	\$ 996,224.13	\$ 1,316,866.88	\$ 908,630.22	\$ 2,570,020.48	\$ 1,772,476.43	\$ 458,237.50	Ş -
Consultant	\$ 3,891,08	5.95 \$-	\$	<u>}-</u>	Ş-	\$ -	\$ 172,449.22	\$ 1,322,112.79	\$ 2,326,723.18	\$ 69,324.62	\$ 18.72	\$ 457.42	\$-	\$ -	ş -	\$ -	ş -	\$ -	\$-
Procurement	\$ 56,314,50	5.65 \$-	Ş	\$-	\$-	\$ -	\$-	\$ 10,700,291.43	\$ 1,066,603.40	\$ 411,867.23	\$ 1,396,158.66	\$ 3,702,822.60	\$ 17,659,881.93	\$ 5,433,808.09	\$ 4,771,968.36	\$ 5,813,413.96	\$ 4,514,573.90	\$ 843,117.09	\$ -
Construction	\$ 110,879,54	7.14 \$-	Ş	<u>}-</u>	Ş-	\$ ·	\$ 859,999.72	\$ 7,930,944.42	\$ 4,358,523.36	\$ 7,023,725.22	\$ 6,861,249.40	\$ 9,412,334.94	\$ 15,043,747.57	\$ 14,828,178.57	\$ 8,785,326.74	\$ 7,600,707.10	\$ 14,667,581.31	\$ 13,461,564.19	\$45,664.60
NYPA	\$ 5,158,78	1.95 \$-	\$	S-	Ş-	ş -	ş -	\$ 393,541.08	\$ 359,145.82	\$ 267,814.72	\$ 223,475.27	\$ 491,182.74	\$ 179,747.34	\$ 267,184.92	\$ 682,752.00	\$ 1,169,424.58	\$ 540,757.15	\$ 538,094.73	\$45,664.60
Contractor	\$ 105,720,76	2.19 \$-	\$	S-	Ş-	ş -	\$ 859,999.72	\$ 7,537,403.34	\$ 3,999,377.54	\$ 6,755,910.50	\$ 6,637,774.13	\$ 8,921,152.20	\$ 14,864,000.23	\$ 14,560,993.65	\$ 8,102,574.74	\$ 6,431,282.52	\$ 14,126,824.16	\$ 12,923,469.46	Ş -
Direct	\$ 16,825,06	4.91 \$-	Ş	S-	Ş-	\$ 313,114.02	\$ 778,311.98	\$ 778,311.97	\$ 778,311.96	\$ 1,047,595.24	\$ 1,225,238.00	\$ 1,225,238.00	\$ 1,844,763.05	\$ 2,026,443.54	\$ 1,634,873.77	\$ 1,663,382.23	\$ 1,838,968.12	\$ 1,670,513.03	\$ -
Indirect	\$ 13,747,42	3.99 \$-	Ş	3-	Ş-	\$ 322,855.87	\$ 802,527.44	\$ 802,527.43	\$ 615,116.49	\$ 827,936.80	\$ 968,331.67	\$ 968,331.67	\$ 1,457,955.52	\$ 1,601,541.47	\$ 1,292,075.56	\$ 1,314,606.41	\$ 1,453,375.65	\$ 1,320,242.01	\$ -
	Total \$ 216,208,23	3.26 \$-	\$	3-	Ş-	\$ 918,885.64	\$ 3,793,543.20	\$ 22,608,801.20	\$ 9,540,690.00	\$ 10,738,745.78	\$ 11,541,404.84	\$ 16,455,433.23	\$ 37,002,572.16	\$ 25,206,838.51	\$ 17,392,874.64	\$ 18,962,130.23	\$ 24,246,975.42	\$ 17,753,673.81	\$45,664.60

By Phase

YEARLY COST DIST	RIBUTION															
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	TOTAL	
Phase #1	\$1,109,355.00	\$4,365,491.00	\$20,853,795.00	\$11,150,942.00	\$1,344,534.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$38,824,117.00	
Phase #2	\$0.00	\$0.00	\$1,007,484.00	\$2,418,676.00	\$9,703,932.00	\$12,415,677.00	\$9,702,655.00	\$46,714.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$35,295,138.00	
Phase #3	\$0.00	\$0.00	\$63,936.00	\$143,128.00	\$551,903.00	\$741,862.00	\$4,524,561.00	\$17,835,498.00	\$13,786,336.00	\$51,093.00	\$0.00	\$0.00	\$0.00	\$0.00	\$37,698,317.00	
Phase #4	\$0.00	\$0.00	\$0.00	\$21,960.00	\$518,759.00	\$460,117.00	\$0.00	\$932,644.00	\$2,744,074.00	\$18,152,823.00	\$14,601,435.00	\$62,478.00	\$0.00	\$0.00	\$37,494,290.00	
Phase #5	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$19,662.00	\$13,023.00	\$95,284.00	\$2,633,576.00	\$25,344,115.00	\$15,861,329.00	\$8,433.00	\$43,975,422.00	
TOTAL	\$1,109,355.00	\$4,365,491.00	\$21,925,215.00	\$13,734,706.00	\$12,119,128.00	\$13,617,656.00	\$14,227,216.00	\$18,834,518.00	\$16,543,433.00	\$18,299,200.00	\$17,235,011.00	\$25,406,593.00	\$15,861,329.00	\$8,433.00	\$193,287,284.00	
MONTHLY COST D	ISTRIBUTION															
	2013	2013	2013	2013	2013	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014	2014
	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14
Phase #1	\$232,436.00	\$211,305.00	\$243,002.00	\$200,741.00	\$221,871.00	\$243,002.00	\$230,910.00	\$270,191.00	\$277,182.00	\$293,128.00	\$294,297.00	\$279,833.00	\$273,935.00	\$277,869.00	\$321,908.00	\$748,883.00
Phase #2	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Phase #3	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Phase #4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Phase #5	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
TOTAL	\$232,436.00	\$211,305.00	\$243,002.00	\$200,741.00	\$221,871.00	\$243,002.00	\$230,910.00	\$270,191.00	\$277,182.00	\$293,128.00	\$294,297.00	\$279,833.00	\$273,935.00	\$277,869.00	\$321,908.00	\$748,883.00



PROGRAM 2

- Success on TLEM program led us getting involved in Program 2
- Program 2 was essentially designed to realize agency's long-term goal of developing agile, flexible, responsive and fully digitized Grid. Budget: \$1.2 billion
- On-going program
- Accounted Cost and Resources
- Developed Fiscal Budgets and FTE Requirements

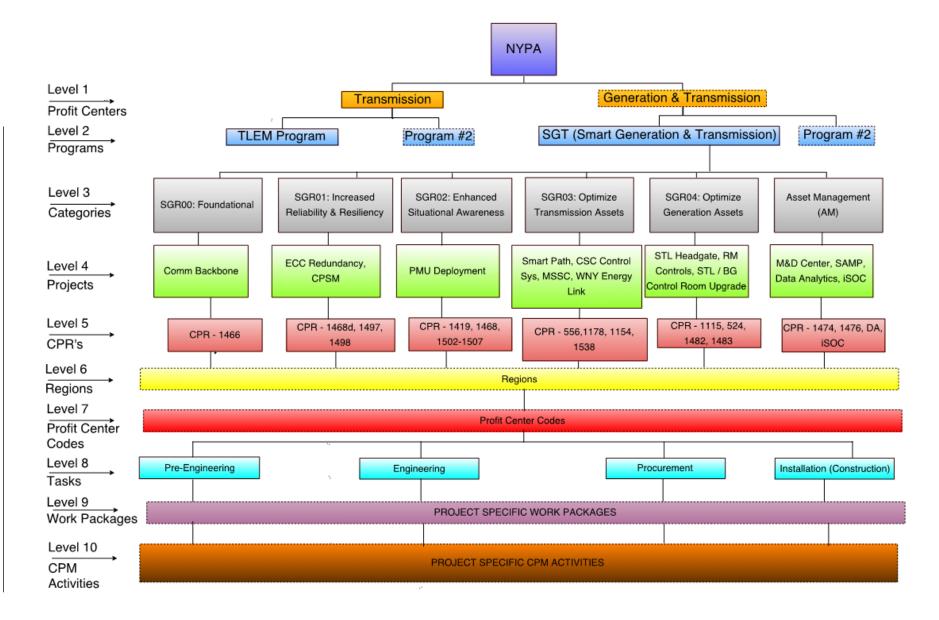


PROGRAM OUTLINE

Capability Areas	Project Areas	2016		201		18 20	19 2	020	2021 20		2023+
SGR0: Foundational	Comm. <u>BackBone</u> (Reference Architecture)				& Proc. Completed a Architecture Alig	gned To EPRI Intellig	🗙 🖈	1/S			
SGR1: Increased					& Proc. Completed						
Reliability & Resiliency	CPSM PI	an, & Bus.	Case, 🖈			Settlingless Protec	tion I/S 🗙 New NE	RC-005 Compliant	Station Monitor & Ctr	l Sys. Arch. I/S A	cross NYP
SGR2: Enhanced	PMUs	★Plan & I	Bus. Case	★ 4	/S (First set)						
Situational Awareness	Next-Gen EMS Partnership	o ★	Vision & B	us. Case	e 🛧 Development	★ Simulat	ion w/ Vendor	★Commercializa	ation By Vendor for Sul	-Second Grid Co	ntrol
SGR3: Optimize Transmission Assets	MSSC SMART Path WNY PAR WNY Energy Link CSC Upgrades	→ Plan & → Pla	★1/ 5 Bus. Case Bus. Case an & Bus. C Bus. Cas⊵		*	★Licensin , Design & Engr. Licensing, Design & I ★Licensing, Desig	0	★ 1/S		★1/s ★1/s	
	Central East 345kV Upgr		i	★ PI	an & Bus. Case			TLicensing, D	esign & Engr.		★ 1/s
SGR4: Optimize	STL Headgate System RMNPP Controls Upgrade			→ PI	ל¶Plan & Bus. Case an לד	★Design & Engr. 5. Case			★Enr. Complete &	★1/S k Fab. Start	
Generation Assets	BG Ctrl Rm Upgr STL Ctrl Rm Upgr		Plan & Bu Plan & Du			Design & Engr. Design & Engr.	★1/s ★1/s			7	Start In Start In
SGR5: Integrate Bulk Renewables	BG Optimization		*1	Neeting	g with NYISO to Di	scuss Policy					
SGR6: Integrate DG /	ESP-OGS MicroGrid	★Plan &	Bus. Case		★Licensing, Des	ign & Engr.		★1/S			
MicroGrids	MicroGrid/DER Pilot	7	★Plan & B	us. Cas	e (TBD)						
AM: Strategic Asset Management	SAMP Asset Health (M&D) Cente isOC Data Analytics	Vision	& Bus. Cas	e Bus. Ca		★ISO-55000 Gov. ★Installation Cor stalled & I/S To Incr	nplete & I/S To Ind Tinstallation Co	crease Asset Utiliz omplete & I/S To A	ation, Reduce Inventor lign Network/Security		

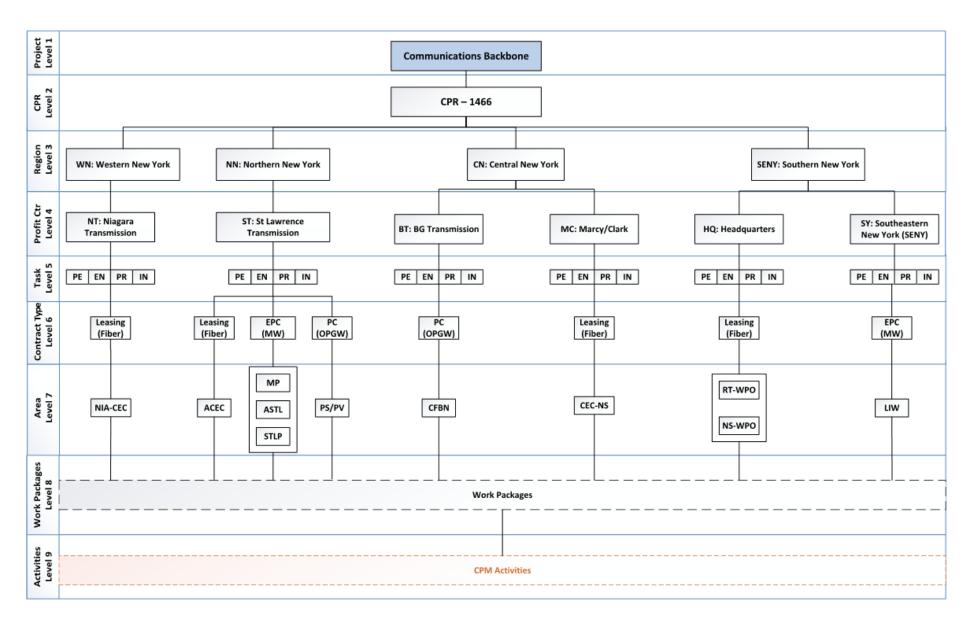


ENTERPRISE PROGRAM STRUCTURE (EPS)





PROGRAM WORK BREAKDOWN STRUCTURE





Activity ID

Engi Mic

	Activity Name			00	RD	Start	Finish	TF	Resour	rce ID)8			Budgeted Total 16 Cost	2017 1410 JULASON	2018 [[] [] [] [] [] [] [] [] []	a
Pre-Engineering - Fiber	Path - Adirondack - CEC (AC	EC)		83	83	01-Sep-16	30-Dec-16	0					_	\$9,441	11100401	1-10-10-10-10-10-10-10-10-10-10-10-10-10	-
1466.NN.ST.11-1020	Develop Specifications for Lea	asing - A	CEC	83	83	01-Sep-16	30-Dec-16	0	683100)				\$9,441			
Pre-Engineering - Fiber	ath - Adirondack - STL (AS1	TL)		83	83	01-Sep-16	30-Dec-16	144						\$9,441			
1466.NN.ST.11-1010	Develop Specifications for Lea	asing - A	STL	83	83	01-Sep-16	30-Dec-16	144	683100)				\$9,441			
Pre-Engineering - Fiber	ath - St. Lawrence - Plattsb	urgh (S	STLP)	83	83	01-Sep-16	30-Dec-16	133						\$9,441			
1466.NN.ST.11-1030	Develop Specifications for Lea	asing - S	TLP	83	83	01-Sep-16	30-Dec-16	133	683100)				\$9,441			
gineering				440	440	03-Jan-17	24-Sep-18	67						\$1,858,774		1.0.0.0.0.0.1.1.0.0	
icrowave Path - Engine	er-Procure-Construct (EPC)			440	440	03-Jan-17	24-Sep-18	0						\$292,877			
Engineering - Microwav	e Path - Moses Plattsburg (M			440		03-Jan-17	24-Sep-18	0						\$292,877			
Bid Package Preparatio	on - MP	Activity I	D		Activity Name	9		0	0	RD	Start	Finish	TF	Resource IDs	Budgeted Total I6 Cost	2017	
1466.NN.ST.12-1000	EPC Contract Issue for Bid (I		1466.NN.ST.14-	-1330	Delivery for F	iber Path - Willis	- STLP	1	10	10	12-Dec-17	26-Dec-17	143		\$0	YRONDIENAMII	ASIM 14 JI AMJ. D
1466.NN.ST.12-1060	Receive Bids and Contract Av		1466.NN.ST.14-	-1340	Delivery for F	Fiber Path - Ryan	- STLP	1	10	10	12-Dec-17	26-Dec-17	143		\$0		B
	D					/ Installation - S		_	70		27-Dec-17	04-Apr-18	143		\$833,491		
1466.NN.ST.12-1050 Design Review - MP	Procurement of Contractor -					ana - STLP Dark			70	_	27-Dec-17	04-Apr-18	143		\$138,647		
1466.NN.ST.12-1090	Review of Preliminary Design					 Massena - STLP Instruction/Installar 	tion - Massena - STL		5		27-Dec-17 27-Dec-17	03-Jan-18 21-Mar-18	133	H623 672100	\$661 \$72,857		
1466.NN.ST.12-1090	Review of Final Design by N																
1400.101.01.12-1110	Trenew of Final Design by R		1466.NN.ST.14	4-2590	Filter Electro	nics - Massena - S	STLP	6	50	60	27-Dec-17	21-Mar-18	143	\$330, \$400, H227, 672100	\$11,767		
1466.NN.ST.12-1120	Shop Drawing Review by NY		1466.NN.ST.14	4-2800	Equipment	olation AC/DC - N	Aassena - STLP	•	50	60	27-Dec-17	21-Mar-18	143	S330, S400	\$5,963		
1466.NN.ST.12-1100	Acceptance of Design for Mic PV				-	tion - Marsena - S	STLP		30		27-Dec-17	21-Mar-18		\$330, \$400, H227	\$15,426		
1466.NN.ST.12-1150	Review of Final Design by N Segments					/lassena - STLP ion - Massena - S'	TLP		15 10	15 10	04-Jan-18 25-Jan-18	24-Jan-18 07-Feb-18	143 143	1 Former	\$1,321 \$661		
1466.NN.ST.12-1160	Acceptance of Design for Mic Remaining Segments		1466.NN.ST.14	4-1660	Fiber Installa	tion - Massena - S	STLP	1	10	10	08-Feb-18	21-Feb-18	143	H623	\$661		8
			1466.NN.ST.14	4-1770	Substation C	onnection - Masse	ena - STLP		10	10	22-Feb-18	07-Mar-18	143	H623	\$6,606		0
NYPA Close-Out/Comm			1466 NN ST 14	4-1880	Commissioni	ng - Massena - S1	TLP		10	10	08-Mar-18	21-Mar-18	143	H623, H626	\$15,138		
1466.NN.ST.12-1180	Commissioning - PV					-											
1466.NN.ST.12-1390	Commissioning - Remaining :		1466.NN.ST.14	4-1890	Construction	Complete - Mass	ena - STLP		0	0		21-Mar-18	143		\$0		•
1466.NN.ST.12-1430	Closeout - MP					assena - STLP mplete - Massena	e71 D		10 D	10	22-Mar- 8	04-Apr-18	143	H623, H626, S530	\$7,588 \$0		
iber Path - Leasing									0	0		04-Apr-18*	143		30		
	h - Adirondack - CEC (ACEC)					eti binak tak					and the second sec	une pr-18	143		\$226,889		
Bid Package Preparatio			1466.NN.ST.14						5	-	27-Dec-17	od-Jan-18	143		\$661		0
1466.NN.ST.12.1000	Leasing Contract Issue for Bi		1466.NN.ST.14	4-2120	Summary Co	nstruction/Installa	tion - Willis - STLP	e	50	60	27-Dec-17	21-Mar-18	143	672100	\$149,143		
1466.NN.ST.12.1010	Receive Bids - ACEC					nics - Willis - STLF		e	30	60	27-Dec-17	21-Mar-18		S330, S400, H227, 672100	\$11,767		
1400 kiki 07 to 1000	D		1466.NN.ST.14	4-2780	Equipment Is	iolation AC/DC - W	Villis - STLP	e	50	60	27-Dec-17	21-Mar-18	143	S330, S400	\$5,963		
1466.NN.ST.12.1020	Procurement of Contractor -		1466.NN.ST.14	4-2790	Circuit Migra	tion - Willis - STLF	•		50	60	27-Dec-17	21-Mar-18	143	\$330, \$400, H227	\$15,426		
Design Review - ACEC			1466.NN.ST.14						15	15	04-Jan-18	24-Jan-18		H623	\$1,321		• • • • • • • • • • • • • • • • • • • •
1466.NN.ST.12-1170	Review of Preliminary Design					ion - Willis - STLP			10	10	25-Jan-18	07-Feb-18		H623	\$661		•
1466.NN.ST.12-1310	Shop Drawing Review by NY					tion - Wills - STLF annection - Wills			10	10 10	08-Feb-18 22-Feb-18	21-Feb-18 07-Mar-18		H623 H623, C540	\$661 \$8,376		0
						ng - WPL - STLP			10	10	08-Mar-18	21-Mar-18		H623, H626, C540	\$23,989		0
						Complete - Willis	- STLP		0	0	0011 17	21-Mar-18	143	1000 1000 0500 0510	\$0		•
			1466.NN.ST.14			/illis - STLP mplete - Willis - S1	TIP		0	10	22-Mar-18	04-Apr-18	143 143	H623, H626, S530, C540	\$8,922		
			1400.NN.S1.14	40° 0	Closeout Co	npiete - Wills - ST	167		0	0		04-Apr-18*	143		\$0		
			Construction / 1466.NN.ST.14			- STLP Dark Fibe Rvan - STI P	er		70 5		27-Dec-17 27-Dec-17	04-Apr-18 03-Jan-18	143 143	H623	\$139,038 \$661		
			1992211231.19	1-1-12-1		stylen - on or			5	9	a	30-001-10	145	a themas	4001		

PROJECT LAYOUT

/ID Ad	tivity Name	00	RD	Start	Finish	TF	Resource IDs	Budgeted Total Cost	16 2017 2018 2019 2020 มู่ผลเด่นต่ายให้เห็นไม่ได้สุดนต่ายให้เห็นไม่ได้สุดนต่ายให้เห
Pre-Engineering		83	83	01-Sep-16	30-Dec-16	-)	\$28,323	IVAGADILAWANIINSGADIL MAINYAGADILAM INNYAGADILAWA
	h - New Sc ttland - WPO (New Scottland-WPO)	83	83		30-Dec-16			\$28,323	
1466.SN.HQ.11-1020 De	welop Specifications for Leasing - New	83	83	01-Sep-16	30-Dec-16		683100	\$28,323	
	ottland-WPD	320	220	02 Jan 17	04-Apr-18			8470 704	
Engineering			320	03-Jan-17		· ·		\$172,764	
	lew Scottl: nd-WPO Dark Fiber	80	80	03-Jan-17	24-Apr-17	(•	\$111,986	
1466.SE.HQ.12.1000 Les So	asing Contract Issue for Bid (IFB) by NYPA - New ottland-WP	20	20	03-Jan-17	30-Jan-17	(683100, H626	\$28,634	
1466.SE.HQ.12.1010 Re	cosive Bids - New Scottland-WPO	60	60	31-Jan-17	24-Apr-17	0	683100, H227, H608, H620, H626, C540, Q330, Q400, H625	\$83,352	
1466.SE.HQ.12.1020 Pro	ocurement of Contractor - New Scottland-WPO	0	0		24-Apr-17	0		\$0	•
Design Review - New Scottla	and-WPO ark Fiber	70	70	15-Sep-17	26-Dec-17	0)	\$49,085	
-	wiew of Preminary Design by NYPA - New	20	20		12-Oct-17	(H227, H608, H614, H626, N400, C540	\$15,286	
Sa	ottland-WPO								
1466.SN.HQ.12-1180 Sh	op Drawing Review by NYPA - New Scottland-WPO	20	20	10-Nov-17	11-Dec-17		H227, H608, H614, H626, N400, C540	\$16,765	
	wiew of Final Design by NYPA - New ottland-WP	20	20	28-Nov-17	26-Dec-17	0	H227, H608, H614, H626, N400, C540	\$17,034	
1466.SN.HQ.12-1150 Ac	ceptance of Design by NYPA - New Scottland-WPO	0	0		26-Dec-17	0		\$0	•
NYPA Close-Out/Commissio	oning - CEC New Scottland Dark Fiber	20	20	08-Mar-18	04-Apr-18	(0	\$11,693	
1466.SN.HQ.12-1200 Co	mmissioning - New Scottland-WPO	10	10	08-Mar-18	21-Mar-18	(H227, H614	\$7,308	
1466.SN.HQ.12-1190 Clo	oseout - New Scottland-WPO	10	10	22-Mar-18	04-Apr-18	(H227, H614	\$4,385	
Procurement		682	682	25-Apr-17	02-Jan-20	107	7	\$801,967	
Leasing Agreement - New S	cottland-WPO Dark Fiber	682	682	25-Apr-17	02-Jan-20	107	7	\$801,967	
	egotiate Learing Agreement - New Scottland-WPO	80	80	25-Apr-17*	16-Aug-17	0		\$0	
1466.SN.HQ.13-1220 Aw	vard Leasing Contract - New Scottland-WPO	0	0	17-Aug-17		0		\$0	
1466.SN.HQ.13-1250 Lea	asing - New Scottland-WPO	452	452	22-Mar-18	02-Jan-20	107	CB-LEASE	\$87,727	
	asing Reneval in Jan 2020 - New Scottland-WPO	1	1	02-Jan-20*	02-Jan-20		CB-LEASE	\$714,240	
A		400	400	47.4	04.4 40	0		\$4.050.400	
Construction		160	160	17-Aug-17	04-Apr-18			\$1,352,169	
	eering - New Scottland-WPO Dark Fiber	70	70		27-Nov-17	0	·	\$10,000	
1466.SN.HQ.14-1160 Pre	eliminary Design - New Scottland-WPO	20	20	17-Aug-17	14-Sep-17	0)	\$0	
	immary Engineering Construction - New ottland-WPO	70	70	17-Aug-17	27-Nov-17	0	672100	\$10,000	
1466.SN.HQ.14-1150 Fin	nal Design - New Scottland-WPO	30	30	13-Oct-17	27-Nov-17	()	\$0	
Leasing Contractor - Procur	rement - New Scottland-WPO Dark Fiber	50	50	13-Oct-17	26-Dec-17	0)	\$0	
	op Drawing Submission by Contractor - New ottland-WPO	20	20	13-Oct-17	09-Nov-17	0		\$0	
1466.SN.HQ.14-1180 De	livery for Fiber Path - New Scottland-WPO	10	10	12-Dec-17	26-Dec-17	(\$0	
Construction / Installation -	New Scottland-WPO Dark Fiber	70	70	27-Dec-17	04-Apr-18	(\$1,342,169	
1466.SN.HQ.14-1260 Mo	obilization - New Scottland-WPO	5	5	27-Dec-17	03-Jan-18	0	H625	\$1,188	
1466.SN.HQ.14-1290 Su	mmary Construction - New Scottland-WPO	60	60	27-Dec-17	21-Mar-18	0	672100	\$52,500	
1466.SN.HQ.14-1300 Fib	ber Electronics - New Scottland-WPO	60	60	27-Dec-17	21-Mar-18	(Q330, Q400, H227, 672100	\$1,211,767	
	Remaining Level of Effort		ritical Re ilestone	maining Work					Layout : Comm Back - Complete - Project Layout ; Data Date : 01-Sep-16 Filter : TASK filter: Program Milestone Comm Back.
	1								Print Date : 03-May-17 - 12:14

PROJECT **REPORT DASHBOARD**

🕗 Project Summary Project Performance

The Communication Backbone Program is part of NYPA's Smart Generation & Transmission ("SG&T") Strategic Initiative and will implement a robust, secure, and scalable communications network that will allow NYPA to: 1. Replace NYPA's legacy point-to-point circuits. Deploy intelligent end-point devices ("IEDs") through the SG&T initiative. Establish a backbone 3 network for the objectives

associated with NYPA's

🎐 Work this Month (July)

OPGW in progress.

larger Strategic Vision.

		CPR 1466 - 0	Communications	Backbone - Earn	ed Value Repor	t #4 as of 07.35.17		
DESCRIPTION	PLANNED BUDGET TO DATE (PB)	TO DATE (N)	ACTUAL COST TO DATE (AC)	COST VARIANCE [CV]	SCHEDULE XXMANCE (3V)	TOTAL AUTHORIZED BUDGET (TAR)	EXTERNTS AT COMPLETION (EAC)	COMPLETION (MAC
12000	1 1,011,80	1 10102	1 101010	1 DELAN	1 0.000.NO	S BUILDER		
Pre-Engineering	3 2,338,572	5 2,251,866	\$ 2,412,598	5 (170.792)	\$ 186,700	5 2,866.885		
NYPA	\$ \$25,000	5 \$25,000	\$ 445,561	5 0.04,593	ş	5 X25,800		
Consultant	\$ 2,063,972	1 1,834,886	1 1,479,287	8 (12,412)	1 (84,700)	8 2,041,8W		
Engineering	\$ 2,899,814	5 801,874	5 1.014.305	5 0290,402		5 5,NA.828		
NYPA	\$ 990,825	5 236,223	5 215,261	5 EH.983	\$ (217,614)	5 3,215,500		
Consultant	1 846,026	8 METANA	8 281,101	8 (211.4M2)	4 (218,378)	8 2,411,418		
Procurement	3 2,499	5 -	3 17.525	5 011.125	\$ 0.490	5 2,854,879		
NYPA	5 5,495	5 -	5 17.525	5 (11.125)	\$ (1.491)	5 2,954,979		
Construction	1 30,483	8	8 31,217	8 (11.207	\$ (10,481)	8 20.212.028		
NYPA	1 · ·	5 -	2 26,688	5 (2).649	ş -	5 1,817,281		
Contractor	\$ 30,465	5 -	\$ 4,549	5 14,548	\$ (30,411)	5 11,295,275		
Indext (MPA)	8 390,462	\$ 181,787	§ 212,707	8 ×	5 (116,670)	\$ 1,711,966		
Contingency	\$ 909,511	\$ 261,095	ş .	\$ 261,085	\$ \$342,436	\$ 2,999,775		

Includes: RECEM Support Services Assessiti till July. In addition, includes Accruais for July of \$76,377.44 and \$85864.Accruais for July of \$22,000.

Project Cash flow

ark Fiber Procurement

Notes: Dark Fiber Packages are behind schedule, which is cause of low SPI. Plan to focus on these packages in September.

•	Kick-off meeting held with				
	Michaels for GNS-1 OPGW Project.	😃 Project Milestones			
•	Issued NNY Dark-Fiber spec and RFP for NYPA's	Description	Plan	Forecast	Notes
	review and approval.	NYPA Engineering Review Of GNS-1 Design Package	5/31/17	3/30/2017(A)	Completed on 3/31/17
•	Internal interviews conducted for NNY	Issue GNS1 RFP for Construction	4/15/2017	3/24/17(A)	Issued on 3/24/17
	Microwave Project. Fiber Electronics POR	M.W.P.EPC Contractor to Submit Shop Drawings for Review	9/15/2017	9/15/2017	
	issued to AECOM for	NYPA Engineering to Review M.W.P. Shop Drawings	10/15/2017	10/15/2017	
	detailed engineering and IT/Operations staffing	A/E Firm Design for GF6-35 For Review	9/30/2017	9/30/2017	
	plan.	NYPA Engineering to Review GF5-35 Design Package	10/15/2017	10/15/2017	
•	Detailed engineering for	GNS1 Line OPGW Installation	11/30/2017	11/30/2017	

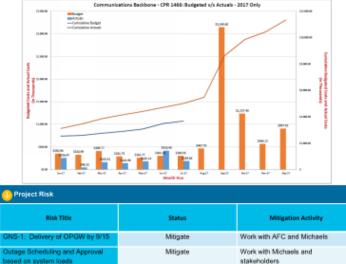
Next Month Plan (August)

 Award NNY Microwave Proposals NNY Dark Fiber out to Bid

 Award NNY Microwave Advance OPGW and

Fiber Electronics designs

 Submit WNY-WPO Dark Fiber RFP and out to Bid



Mitigate

Work with Procurement to expedite

onboarding and bidding

Project Controls EXPO Washington, DC - USA

FISCAL BUDGETS

COST													
Resource ID	Resource Name		2016		2017		2018		2019	r	2020		TOTAL
672100	Communications Backbone Cost Resource	\$	-	\$	3,978,046.23	\$	10,180,564.22	\$	592,155.38	\$	6,544,469.01	\$	21,295,234.8
683100	Consultant Engineering Services	\$	1,210,809.74	\$	1,247,770.39	\$	350,247.95	\$	43,140.00	\$	34,126.00	\$	2,886,094.0
689100	Consultant Management Services	\$	872,120.98	\$	219,838.64	\$	220,707.57	\$	220,707.56	\$	93,844.15	\$	1,627,218.9
B330	Electrical Maintenance	\$	-	\$	25,804.64	\$	10,625.44	\$	3,794.80	\$	14,420.24	\$	54,645.
B400	Instrument & Control	\$	-	\$	40,791.16	\$	19,755.36	\$	3,658.40	\$	23,413.77	\$	87,618.
B530	Design & Drafting	\$	-	\$	2,875.60	\$	2,875.60	\$	-	\$	2,875.60	\$	8,626.
C330	Electrical Maintenance	\$	-	\$	531.27	\$	10,094.16	\$	-	\$	-	\$	10,625.4
C340	Line Maintenance	\$	-	\$	30,935.52	\$	42,482.88	\$	-	\$	10,264.32	\$	83,682.
C400	Instrument & Control	\$	-	\$	629.58	\$	11,962.10	\$	-	\$	-	\$	12,591.0
C530	Design & Drafting	\$	-	\$	-	\$	3,450.72	\$	-	\$	-	\$	3,450.
C540	Technical Services	\$	-	\$	216,747.67	\$	68,893.09	\$	13,387.69	\$	8,187.51	\$	307,215.9
CB-LEASE	Communication Backbone Lease Cost	\$	-	\$	-	\$	677,510.25	\$	120,140.08	\$	2,143,108.17	\$	2,940,758.
H227	IT Project Management	\$	-	\$	216,637.46	\$	344,038.74	\$	46,699.05	\$	26,746.81	\$	634,122.0
H530	Design & Drafting	\$	-	\$	-	\$	-	\$	5,751.20	\$	-	\$	5,751.
H605	Protection & Control	\$	-	\$	20,291.20	\$	15,218.40	\$	-	\$	-	\$	35,509.0
H608	System / Civil / Geological / Hydro Engine	S	27,525.49	S	573,801.34	S	105,846.91	S	37,110.95	S	-	S	744,284.0
H614	Operation Technology	S	-	S	72,230.25	S	122,379.76	S	22,230.45	S	7,185.60	S	224,026.0
H620	Cost & Scheduling	\$	-	Ś	49,203.90	S	10,775.74	S	4,754.00	S	-	S	64,733.0
H622	Western NY PM	Ś	-	Ś	2,542.15	Ś	20,612.00	Ś	-	Ś	-	Ś	23,154.1
H623	Northern NY PM	\$	-	Ś	65,695,86	Ś	308,284,53	Ś	-	Ś	-	Ś	373,980.
H624	Central NY PM	S	-	Ś	54,187.03	Ś	72,492.84	Ś	27,390.24	Ś	41.085.36	Ś	195,155.4
H625	Southeast NY PM	S	-	Ś	6,650.11	Ś	82,413.89	Ś	45,125.76	Ś	-	Ś	134.189.
H626	Transmission PM	Ś	-	Ś	483,799.93	Ś	341,603.19	Ś	64,523.25	Ś	19,197.00	Ś	909,123.
H638	Smart Generation & Technology	\$	40,299.86	ŝ	159,790.78	ŝ	134,734.38	Ś	123,327.29	Ś	57,397.97	Ś	515,550.2
N330	Electrical Maintenance	ŝ	-	ŝ	2,340.13	ŝ	19,732.96	ŝ	8,348.56	Ś	-	\$	30,421.0
N400	Instrument & Control	\$	-	Ś	19,541.95	Ś	29,084.29	Ś	16,188.42	Ś	-	\$	64,814.6
N530	Design & Drafting	ŝ	-	Ś	-	Ś	1,725.36	Ś	1,725.36	Ś	-	Ś	3,450.
NYPA-R	NYPA Resources	ŝ	612.798.82	ŝ	877.266.36	Ś	1.219.553.77	Ś	1.635.648.48	Ś	695,472,58	ŝ	5.040.740.0
Q210	Control Room	\$	-	\$	-	Ś	-	Ś	523.76	Ś	-	ŝ	523.
Q330	Electrical Maintenance	\$	-	ŝ	4,326.25	ŝ	32,105.37	Ś	17,456.82	Ś	-	\$	53.888.
Q400	Instrument & Control	ŝ	-	ŝ	4,353.50	ŝ	31.498.83	Ś	24,145.44	Ś	-	Š	59,997.
Q530	Design & Drafting	\$	-	ŝ	-	Š	2,875.60	Ś	-	Š	-	\$	2,875.0
S210	Control Room	\$	-	ŝ	-	ŝ	1,571.28	ŝ	-	\$	-	ŝ	1,571.2
S330	Electrical Maintenance	\$	-	ŝ	55,176,78	ŝ	170.243.85	ŝ	-	ŝ	-	ŝ	225,420.6
S400	Instrument & Control	ŝ	-	ŝ	128,357.31	ŝ	213,337.24	Š	-	ŝ	-	ŝ	341,694.
S530	Design & Drafting	\$	-	\$	11,502.40	\$	18,403.84	ŝ	-	s	-	ş	29,906.
S609	Design & Drafting	s	-	ŝ		ŝ	2,400.48	ŝ	-	s		Š	2,400.
	Total	-	2,763,554.89	-	8,571,665.39		14,900,102.59	-	3,077,932.94	-	9,721,794.09	-	39,035,049.

FISCAL
MAN-
HOURS

Resource ID	Resource Name	TOTAL MH 2016	TOTAL MH 2017	TOTAL MH 2018	TOTAL MH 2019	TOTAL MH 2020	TOTAL MH
B330	Electrical Maintenance	0	272	112	40	152	57
B400	Instrument & Control	0	446	216	40	256	95
B530	Design & Drafting	0	40	40	0	40	12
C330	Electrical Maintenance	0	6	106	0	0	11
C340	Line Maintenance	0	434	596	0	144	117
C400	Instrument & Control	0	8	144	0	0	15
C530	Design & Drafting	0	0	48	0	0	4
C540	Technical Services	0	1959	623	121	74	277
H227	IT Project Management	0	2009	3190	433	248	588
H530	Design & Drafting	0	0	0	80	0	8
H605	Protection & Control	0	160	120	0	0	28
H608	System / Civil / Geological / Hydro Enginee	205	4267	787	276	0	553
H614	Operation Technology	0	965	1635	297	96	299
H620	Cost & Scheduling	0	414	91	40	0	54
H622	Western NY PM	0	25	200	0	0	22
H623	Northern NY PM	0	796	3734	0	0	452
H624	Central NY PM	0	475	635	240	360	171
H625	Southeast NY PM	0	45	555	304	0	90
H626	Transmission PM	0	4536	3203	605	180	852
H638	Smart Generation & Technology	325	1289	1087	995	463	415
N330	Electrical Maintenance	0	25	208	88	0	32
N400	Instrument & Control	0	214	318	177	0	70
N530	Design & Drafting	0	0	24	24	0	4
Q210	Control Room	0	0	0	4	0	
Q330	Electrical Maintenance	0	46	338	184	0	56
Q400	Instrument & Control	0	48	344	264	0	65
Q530	Design & Drafting	0	0	40	0	0	4
S210	Control Room	0	0	12	0	0	1
S330	Electrical Maintenance	0	582	1794	0	0	237
S400	Instrument & Control	0	1403	2333	0	0	373
S530	Design & Drafting	0	160	256	0	0	41
S609	Design & Drafting	0	0	24	0	0	2
	Total	530	20621	22814	4212	2013	5018

FULL TIME EQUIVALENT (FTE)

FTE's						
Resource ID	Resource Name	Avg. FTE 2016	Avg. FTE 2017	Avg. FTE 2018	Avg. FTE 2019	Avg. FTE 2020
B330	Electrical Maintenance	0	0	0	0	
B400	Instrument & Control	0	0	0	0	
B530	Design & Drafting	0	0	0	0	
C330	Electrical Maintenance	0	0	0	0	
C340	Line Maintenance	0	0	0	0	
C400	Instrument & Control	0	0	0	0	
C530	Design & Drafting	0	0	0	0	
C540	Technical Services	0	1	0	0	
H227	IT Project Management	0	1	2	0	
H530	Design & Drafting	0	0	0	0	
H605	Protection & Control	0	0	0	0	
H608	System / Civil / Geological / Hydro Enginee	0	2	0	0	
H614	Operation Technology	0	1	1	0	
H620	Cost & Scheduling	0	0	0	0	
H622	Western NY PM	0	0	0	0	
H623	Northern NY PM	0	0	2	0	
H624	Central NY PM	0	0	0	0	
H625	Southeast NY PM	0	0	0	0	
H626	Transmission PM	0	2	2	0	
H638	Smart Generation & Technology	0	1	1	1	
N330	Electrical Maintenance	0	0	0	0	
N400	Instrument & Control	0	0	0	0	
N530	Design & Drafting	0	0	0	0	
Q210	Control Room	0	0	0	0	
Q330	Electrical Maintenance	0	0	0	0	
Q400	Instrument & Control	0	0	0	0	
Q530	Design & Drafting	0	0	0	0	
S210	Control Room	0	0	0	0	
S330	Electrical Maintenance	0	0	1	0	
S400	Instrument & Control	0	1	1	0	
S530	Design & Drafting	0	0	0	0	
S609	Design & Drafting	0	0	0	0	
	Total	0	11	12	2	

SOCIAL ENGINEERING

Decide what not to change

Change in Agency's Organization Structure. Challenge of indoctrinating new Program Management team

Involvement of Corporate Consultant



PROGRAM 3

- Program 3 involved Life Extension & Modernization of a large Hydro Electric Power Plant. Budget: 1.0 billion.
- Success on previous two programs allowed the agency to start setting up a standard Project Controls process.
- The previous two programs were on-going.
- This third program implemented the project controls procedure since inception.
- This allowed us to establish WBS codes and integrate schedule, estimate (budget) and financial accounting system. This enabled seamless Earned Value Management with schedule, cost and accounting system singing and dancing together.



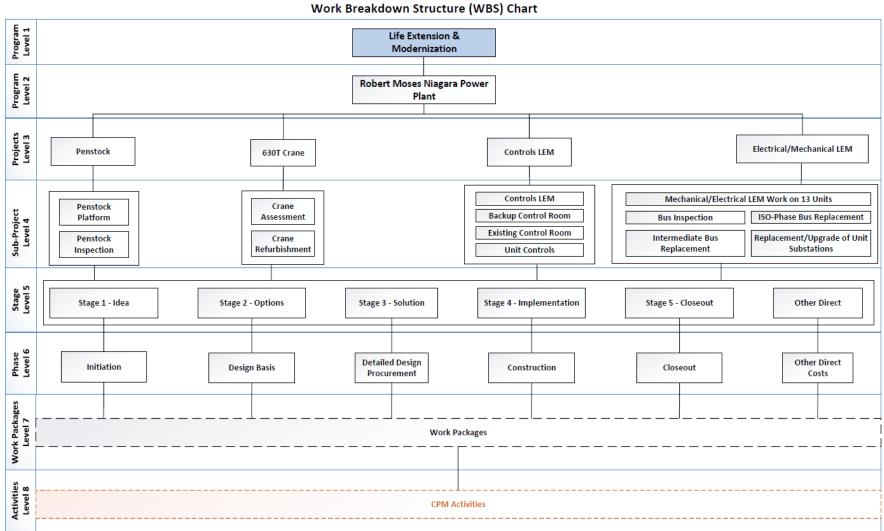
WORK BREAKDOWN STRUCTURE

	A 4 4 4		The second
Stage	Phase	Major Capital WBS	Description
Stage 1 - Idea	Initiation	CNG-ABC-11-PRE11	Captures all charges associated with the project kick off, initial identification of Stakeholders and any other items to proceed through Stage 1. The costs associated with this stage should be minimal.
Stage 2 - Options	Design Basis	CNG-ABC-12-ENG1	Captures engineering charges associated with project scoping.
Stage 3 - Solution	Detailed Design	CNG-ABC-13-ENG2	Captures charges associated with Engineering. This includes deliverables for alternative analysis, detailed design and scope documents and construction oversight.
	Procurement	CNG-ABC-13-MAT1	Captures all charges for purchasing of equipment or material or charges from materials delivered from the warehouse.
Stage 4 - Implementation	Construction	CNG-ABC-14-CON1	Captures all charges associated with implementation, i.e. construction, testing and commissioning. Inclusive of site labo direct charges.
Stage 5 - Closeout	Closeout	CNG-ABC-15-CLO1	Captures all charges with closing out the project including D&D, and site related costs.
Other Direct	Direct	CNG-ABC-18-ODC1	Captures all other owner direct charges except for engineering and site labor which are captured in the in their respective stages. (e.g. project management, environmental, health an safety, construction management, program management, etc.)

WINDLA ADDITION

VIED D

ditte.



CPM SCHEDULE

WBS CODES

RM LEM Pr

Project	Project Notation	WBS Code Count
Penstock	<u>CN</u> G-PBR	20
630T Crane	CNG-PBQ	6
Controls	CNG-PBN	24
Unit LEM	CNG-PBP 🏹	141
TOTAL		191
LEGEND:		
Under "Unit" Column:		
0 = Common for all unit	ts	
A:M = Units 1:13		

				Project Notation:	CNG-PBN		
RM 🐨	Stage 👻	Unit *	Asset Class 💌	Asset Type 💌	WBS Code 👻	Count	
CNG-PBN-	11-	0	L.	PRE1	CNG-PBN-11-PRE1	1	OLD CODE - Move to CNG-PBN-11-OLKM - Prelim Eng for Backup Control Room, Main Control Room, & Unit Controls
CNG-PBN-	11-	0	L.	PRE2	CNG-PBN-11-PRE2	1	OLD CODE - Move to CNG-PBN-11-OLKM - Prelim Eng for Backup Control Room, Main Control Room, & Unit Controls
CNG-PBN-	11-	0	L.	KM	CNG-PBN-11-0LKM	1	NEW CODE - Prelim Eng for Backup Control Room, Main Control Room, & Unit Controls
CNG-PBR-	11-	0	L.	WAR1	CNG-PBR-11-WAR1	1	Warranty Code
CNG-PBN-	13-	0	L.	KM	CNG-PBN-13-0LKM	1	NYPA Eng for Backup Control Room, Main Control Room, & Unit Controls
CNG-PBN-	14-	0	L.	KM	CNG-PBN-14-OLKM	1	Construction/Installation - NYPA Site Labor
CNG-PBN-	14-	A	L.	KM	CNG-PBN-14-ALKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	8	L.	KM	CNG-PBN-14-BLKM	1	Construction/installation - Controls (by unit)
CNG-PBN-	14-	c	L.	KM	CNG-PBN-14-CLKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	D	L	KM	CNG-PBN-14-DLKM	1	Construction/installation - Controls (by unit)
CNG-PBN-	14-	E	L.	KM	CNG-PBN-14-ELKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	F.	L	KM	CNG-PBN-14-FLKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	G	L	KM	CNG-PBN-14-GLKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	н	L	KM	CNG-PBN-14-HLKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	1	L.	KM	CNG-PBN-14-ILKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	1	L	KM	CNG-PBN-14-JLKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	ĸ	L.	KM	CNG-PBN-14-KLKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	L	L	KM	CNG-PBN-14-LLKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	M	L	KM	CNG-PBN-14-MLKM	1	Construction/Installation - Controls (by unit)
CNG-PBN-	14-	N	L	KM	CNG-PBN-14-NLKM	1	Construction/Installation - Backup Control Room
CNG-PBN-	14-	0	L	KM	CNG-PBN-14-OLKM	1	Construction/installation - Main Control Room
CNG-PBN-	15-	0	L	KM	CNG-PBN-15-OLKM	1	NYPA Closeout - Backup & Main Control Room and All Units
CNG-PBN-	18-	0	ĸ	GJ	CNG-PBN-18-OKGJ	1	OLD CODE - Move to CNG=PBN-18-DUCM - NYPA Direct for Backup & Main Control Rooms & Unit Controls
CNG-PBN-	18	0	L	KM	CNG-PBN-18-OLKM	1	NEW CODE - NYPA Direct for Backup & Main Control Rooms & Unit Controls
				TOTAL & OF WAS	CODES (EXCLUDE REPEATS)	24	

40	vity Name		OD Start Fi	nish TE Bi	nary Burlinatori Trital	2018		27 2028 200	9 2030 2031	2032 2033 2	124 2135		
1~			4396 16-Apr-18 A 15	Co	straint Cost	00000		00000000		2000000000	0000		
ogram	Schedule - April 20	19 Update - DD	4396 16-Apr-18 A 15 4396 16-Apr-18 A 15		\$1,076,960.09								
			4396 16-Apr-18 A 19 4396 16-Apr-18 A 19		\$0.00								
litestones			4396 16-Apr-18 A 15 4396 16-Apr-18 A 15	3-Feb-35 0 3-Feb-35 0	\$0.00								
Proj	ect Start Milestone ect Finish Milestone		0 16-Apr-18 A	9-Feb-35 0	\$0.00 \$0.00	٠							
nt Pha	se 1 Activities		268 11-May-18 A 21	I-May-19 4109	\$0.00								
cina			268 11-May-18 A 21 268 11-May-18 A 21	-May-19 4109	\$0.00								
	Activities		258 11-May-18 A 21	I-May-19 4109	\$0.00			1 1					
Issu	e Prelminary Program Outline e 85% Detail Program Estima	a Schedule sto	0 11-May-18 A 0 22-May-18 A	22	day-18 \$0.00 May-18 \$0.00	:							
	e 85% Risk Registry e 85% In-House Labor Resor	urce Requirements	0 24-May-18 A 0 25-May-18 A		May-18 \$0.00 May-18 \$0.00	:							
	e 85% Project Plan		0 13-Jul-18A		hil-18 \$0.00								
Issu	e 90% Detail Program Estima iness Case Study w' cost ben		0 06-Aug-18 A 0 06-Aug-18 A	13	kul-18 \$0.00 kul-18 \$0.00	:							
		ent and present net worth											
1994	e 100% Risk Registry e 100% In-House Labor Res	ource Requirements	0 06-Aug-18 A 0 06-Aug-18 A		kul-18 \$0.00 kul-18 \$0.00	:							
Sub	mit Draft Slide Presentation fo	or Program Approval	0 11-Od-18A	11-	Ddi-18 \$0.00	•							
	e 100% Project Plan		0 25-Jan-19 A		lan-19 \$0.00								
EM	C Presentation Ial Funding Trustee Approval		15 11-Mar-19 A 25 5 20-Mar-19 A 26		flar-19 \$0.00								
Issu	e Final Program Outline Sche LEM Program Presentation (to	edule a Roard of Thurteen's	0 29-Mar-19 A		Man.19 \$0.00								
	ding Approval			1-May-19 4109 01-									
	ne nt / Refurbishme	ent	4346 16-Apr-18 A 11	I-Dec-34 50	\$104,646.33								
tform			2503 14-May-18 A 15 671 05-Sep-18 A 01	5-Dec-27 1873	\$5,252.95								
			671 05-Sep-18 A 01		\$0.00								
PA Contra RM	ect Milestones Penatock Performance Speci Penatock Inspection Blatform	fications Review Complete	671 05-Sep-18 A 01 0 05		\$0.00 Sep-18 \$0.00	•							
	and the second second second				40.00								
1552.0	Pfor RM Penstock Inspection ed in ARIBA			I-Sep-18 A	\$4			F	ESTIMATE SUMMAR		AUTH	ORIZATION SUMM	ABY
RO	UND #2 (Re-bid): RFP for R/n form Design-Supply issued in	Penstock Inspection ARIBA	0 11	Feb-19A 15	100-19 \$1 Sta		TASK /ACTIVITY	PREVIOUS	(\$000) CURRENT	MET AUTH	IORIZATIO	(\$000) CURRENT	BE
	9: Milestone 3 - RM Penstock ign-Supply Contract Award Co		0 31	1-May-19" -11 21-		ITEM	DESCRIPTION PRELIMINARY ENG./LICENSING	ESTIMATE	ESTIMATE	CHANGE	н	REQUEST	AUTHORIZED
						PRE		0.0	5,767.0	5,767.0	5,767.0	0.0	0.0
RM Des	Issue NTP for R.M.Penstock I ign-Supply	inspection Platform		1-May-19 -77	SI	PRE	Preliminary Eng. & Design - Controls	0.0	726.2	726.2	0.0	726.2	0.0
201 des	9: Milestone 1 - RM Penstock ign	Contractor provide 90%	0 21	I-Nov-19" -68 19-	kug-19 \$1	VAR	Warranty Work	0.0	233.0	233.0	233.0	0.0	0.0
905	9: Milestone 2 - RM Penstock design submission		0 15	3-Dec-19* -77 03-	Sep-19 \$	-	SUBTOTAL PHASE 1	0.0	6,726.2	6,726.2	6,000.0	726.2	0.0
RM Des	Issue NTP for RM Penstock in ign-Supply	inspection Platform	0 01	I-Apr-21" 0 01-	lpr21 \$ 2		ASSESSMENT / INSPECTION			ì			
						JFT 0900	Penstock Inspection 630T Crane - Refurbish/Replace - Study	0.0	17,082.2	17,082.2	0.0	0.0 750.0	17,082.2 321.3
						0300	Contingence 21%	-	3.851.7	3.851.7	0.0	750.0	321.3
							SUBTOTAL PHASE 2		22,005.1	22,005.1	0.0	750.0	21,255.1
					3	0KG	ENGINEERING / PROCUREMENT LEM - Mechanical / Electrical Engineering	0.0	29.610.5	29.610.5	0.0	0.0	29.610.5
						OLKN		0.0	9,870.2	9,870.2	0.0	0.0	9,870.2
						0JF1	Penstock Platform / Inspection Engineering	0.0	4,486.4	4,486.4	0.0	0.0	4,486.4
						0900 KQA	Crane Engineering Head Covers and Wicket Gates	0.0	897.3 129.872.6	897.3 129.872.6	0.0	0.0	897.3 129.872.6
		КШ	DG			KQE	New Turbine Shafts	0.0	11,565,4	11.565.4	0.0	0.0	11,565,4
							Contingency 21%		39,528.3	39,528.3	0.0	0.0	39,528.3
					4	_	SUBTOTAL PHASE 3	0.0	225,830.7	225,830.7	0.0	0.0	225,830.7
						900	630T Crane Refurbish/Replace - EPC	0.0	9,118,1	9,118.1	0.0	0.0	9,118.1
		\vdash	⁻ IM	ΔΙ	-	JFT	Penstock Repairs	0.0	52,734.5	52,734.5	0.0	0.0	52,734.5
		LJI				KGJ	General Hydro Governor Hydraulic Systems Refurbishment	0.0	186,938.9 1,211.0	186,938.9	0.0	0.0	186,938.9 1,211.0
						KGP	Unit Cooling Water	0.0	1,211.0	777.2	0.0	0.0	777.2
						KPX	Rotor Repairs	0.0	40,574.4	40,574.4	0.0	0.0	40,574.4
						KQA	Head Covers and Wicket Gates Servo Motors	0.0	23,672.6 15,398.0	23,672.6 15,398.0	0.0	0.0	23,672.6 15,398.0
						LKG	Intermediate/ISO Phase Bus Refurbish/Replace	0.0	15,398.0	37,402.9	0.0	0.0	37,402.9
						LKM	Controls - Units/Head Gates plus Control Rooms	0.0	123,407.6	123,407.6	0.0	0.0	123,407.6
					_	LPY	New Stators & Sensors Contingency 21%	0.0	83,779.2 122,002.5	83,779.2 122,002.5	0.0	0.0	83,779.2 122,002.5
					=	-	SUBTOTAL PHASE 4	0.0	697,016.9	697,016.9	0.0	0.0	697,016.9
					5		NYPA CLOSEOUT EXPENSE			077.0			
						0KG		0.0	817.3 272.4	817.3 272.4	0.0	0.0	817.3 272.4
	2019	2019	2019	Grand Tota	al de la constante de la constante de la constante de la constante de la constante de la constante de la consta	0JF1	NYPA Close Out Penstock Platform / Inspection	0.0	123.8	123.8	0.0	0.0	123.8
				Granu Tota		0900	NYPA Close Out Crane	0.0	24.8	24.8 262.8	0.0	0.0	24.8
	Apr	May	Jun			+	Contingency 21% SUBTOTAL PHASE 5	0.0	262.8	262.8	0.0	0.0	262.8
3.73	\$41,371.55	\$85,927.91	\$98,827.14	\$4,983,936	.59 8/		NYPA DIRECT EXPENSE	0.0					
7.42		\$3,090.66	\$346.47	\$58,917		0KG	NYPA Direct LEM - Mechanical / Electrical	0.0	40,049.2 13,349.7	40,049.2 13,349.7	0.0	2,600.0 442.6	37,449.2 12,907.1
1.42		22,020.00	əp40.47			OJFT	NYPA Direct Penstock Platform / Inspection	0.0	5,343.7	5,341.9	0.0	442.6	5,241.9
				\$231,590	.51	0900		0.0	980.8	980.8	0.0	100.0	880.8
0.031	\$587,892.65	\$386,425.58	\$35,692.88	\$2,082,910	.90	-	Contingency 22% SUBTOTAL PHASE 8A	0.0	12,874.8 72,596.3	12,874.8	0.0	43.1 3,285.7	12,831.7 69,310.6
		,	\$4,440.98	\$4,440		3	NYPA INDIRECT EXPENSE 5%	0.0	51,283.8	51,283.8	0.0	238.1	51,045.7
	4	4					SUBTOTAL PHASE 8B PROJECT GRAND TOTAL	0.0	51,283.8	51,283.8	0.0	238.1	51,045.7
8.88)	\$629,264.20	\$475,444.15	\$139,307.47	\$7,361,796	.31		PROJECT GRAND TOTAL		1,076,960.2	1,076,960.2	6,000.0	5,000.0	1,065,960.2

ACTUALS

ID Number (All) 🔻										
Sum of Value TCur	Column Labels 🔻									
	± 2016	± 2017	± 2018	■ 2019	2019	2019	2019	2019	2019	Grand Total
Row Labels 🛛 💌 ParCost. Cost Elem. Cost element name Offset. acct name				Jan	Feb	Mar	Apr	Мау	Jun	
CNG-PBN-11-PRE1	\$141,173.02	\$2,066,787.82	\$2,135,878.40	\$97,004.29	\$78,952.73	\$238,013.73	\$41,371.55	\$85,927.91	\$98,827.14	\$4,983,936.59
CNG-PBN-11-PRE2			\$46,233.37	\$5,938.70	(\$1,249.29)	\$4,557.42		\$3,090.66	\$346.47	\$58,917.33
[®] CNG-PBN-11-WAR1		\$17,331.26	\$214,259.25							\$231,590.51
[®] CNG-PBN-14-0LKM			\$1,165,348.77	\$169,781.05	(\$0.00)	(\$262,230.03)	\$587,892.65	\$386,425.58	\$35,692.88	\$2,082,910.90
[⊛] CNG-PBN-18-0KGJ									\$4,440.98	\$4,440.98
Grand Total	\$141,173.02	\$2,084,119.08	\$3,561,719.79	\$272,724.04	\$77,703.44	(\$19,658.88)	\$629,264.20	\$475,444.15	\$139,307.47	\$7,361,796.31

DASHBOARD

AE				Cost and	d Schedu	ile Perfo	ormance I	Report	Client	pril 2019 Report Month	Budget Actuals Earned —Cumulative E	o nthly Budg e Budget — Cur	nulative	Actuals —Cum	ulative Earned	d
A									4/16/2018 NTP Date	5/15/2019 Updated						
Project	1	PLANNED BUDGET TO DATE (PB)	EARNED VALUE TO DATE (EV)	ACTUAL COST TO DATE (AC)	COST VARIANCE (CV)	SCHEDULE VARIANCE (SV)	BASELINE BUDGET (BB)	ESTIMATE AT COMPLETION (EAC)	Projects	Schedule % Physical % Complete Complete 6% 0	\$15M					\$
•									2 - 630T Crane	27% 5						
 Robert Moses Life E and Modernization 		\$7,070	\$6,495	\$6,747	(\$334)	(\$575)	\$1,076,960	\$1,076,960	3 - Controls LEM	7% 0°			_	on an dat ta		— s
1 - Penstock Assesme Refurbishment	nent/	\$322	\$221	\$232	(\$10)	(\$100)	\$104,646	\$104,646	4 - Mechanical /Electrical LEM	6% 1	\$5M					
2 - 630T Crane Asses Refurbishment	sment/	\$55	\$72	\$0	(\$10)	\$17	\$17,015	\$17,015	379	Time Elapsed %						
3 - Controls LEM		\$870	\$690	\$1,716	(\$1,026)	(\$180)	\$217,045	\$217,045			\$0M					
4 - Mechanical & Elec	ectrical LEM	\$5,823	\$5,512	\$4,799	\$713	(\$311)	\$738,253	\$738,253	Days Elapsed	0% 📥 6% 100%	2019 2020 202	25		2030		2035
Fotal		\$7,070	\$6,495	\$6,747	(\$334)	(\$575)	\$1,076,960	\$1,076,960		and the state state	2	019 Budget	vs Actu	Jal		
									▼ Work Perto	rmed Last Month						
	CPI	SPI		*All the Costs in	dicated above	are in Thousar	nds			ders continue to develop Bids	Budget Actuals Earned —Cumulative E	sudget — Cur	nulative	Actuals —Cum	iulative Earned	a
-	0.96	0.92							Site walk completed with	bidders continue to develop Bids for						
	K	PI Trend					Safety		z. Controis LEM: Bidders (rebid.	continue to develop bids for						
					Der	cription N	umber d	Comments	3. 630T Crane: Crane asse	essment underway	\$6M					
*As an industry star	andard practice.	, this table will	be developed	1 after 4 to 5				commenta		specification issued						
*As an industry star iterations after					N	Major	0	commenta	4. Mech/Elec LEM: Shaft s	specification issued						
*As an industry star iterations after					N Inc	Major tidents	0	commenta	4. Mech/Elec LEM: Shaft s		\$4M				\square	
					N Inc N	Major tidents Minor		connerta	4. Mech/Elec LEM: Shaft s	specification issued ed for Next Month	\$4M				4	
					N Inc N	Major tidents	0	commenta	4. Mech/Elec LEM: Shaft s	ed for Next Month	\$4M				4	
					N Inc N	Major tidents Minor	0	connerta	4. Mech/Elec LEM: Shaft s	ed for Next Month						
			vrocess is stre	amlined.	N Inc N	Major tidents Minor	0		4. Mech/Elec LEM: Shaft s Work Planne 1. Penstock Platform: Bids 4/05/2019	ed for Next Month	\$4M					
iterations after			vocess is stre	stone Status	N Inc N	Major tidents Minor	0		4. Mech/Elec LEM: Shaft s Work Planne 1. Penstock Platform: Bid: 4/05/2019 2. Controls LEM: Bids are	ed for Next Month is are due from vendors				/		
			vrocess is stre	stone Status	N Inc N	Major tidents Minor	0	Actual/Forecast	4. Mech/Elec LEM: Shaft s Work Planne 1. Penstock Platform: Bid: 4/05/2019 2. Controls LEM: Bids are	ed for Next Month s are due from vendors due from vendors 4/15/2019 ection, Phase 1 Completed,	\$2M					
iterations after Project/Activity ID I-Penstock	r the Earned Va	ilue reporting p	vocess is stre Miles Activity	amlined. stone Status Name	N Inc Inc	Vlajor cidents Vlinor cidents	0		4. Mech/Elec LEM: Shaft s Work Planne 1. Penstock Platform: Bid: 4/05/2019 2. Controls LEM: Bids are 3. 630T Crane: NDE Inspe draft of comprehensive re shutdown due to structur	ed for Next Month s are due from vendors due from vendors 4/15/2019 ction, Phase 1 Completed, eport received. Crane ral deficiencies		lut	2019		Oct 2019	
iterations after Project/Activity ID I -Penstock 101290	r the Earned Va	lue reporting p	Miles Activity	amlined. stone Status Name n-Supply Cont	N Inc Inc	Major cidents Minor cidents	0 0 Planned 21-May-19	Actual/Forecast 31-May-19*	4. Mech/Elec LEM: Shaft s Work Planne 1. Penstock Platform: Bid: 4/05/2019 2. Controls LEM: Bids are 3. 630T Crane: NDE Inspe draft of comprehensive re shutdown due to structur	ed for Next Month s are due from vendors due from vendors 4/15/2019 ection, Phase 1 Completed, eport received. Crane	\$2M	Jul	2019		Oct 2019	
iterations after Project/Activity ID I-Penstock 101290 102790	r the Earned Va RM Penstock RM Penstock	Ilue reporting p	Miles Activity atform Desig ovide 90% d	amlined. stone Status Name n-Supply Cont lesign	N Inc N Inc	vlajor cidents cidents cidents	0 0 Planned 21-May-19 19-Auq-19	Actual/Forecast 31-May-19* 21-Nov-19*	4. Mech/Elec LEM: Shaft s Work Planne 1. Penstock Platform: Bid: 4/05/2019 2. Controls LEM: Bids are 3. 630T Crane: NDE Inspe draft of comprehensive re shutdown due to structur	ed for Next Month s are due from vendors due from vendors 4/15/2019 ction, Phase 1 Completed, eport received. Crane ral deficiencies	\$2M \$0M Jan 2019 Apr 2019	Jul	2019		Oct 2019	
Iterations after Project/Activity ID -Penstock 101290 102790 102820	r the Earned Va RM Penstock RM Penstock	Ilue reporting p	Miles Activity atform Desig ovide 90% d	amlined. stone Status Name n-Supply Cont	N Inc N Inc	vlajor cidents cidents cidents	0 0 Planned 21-May-19	Actual/Forecast 31-May-19*	4. Mech/Elec LEM: Shaft s Work Planne 1. Penstock Platform: Bid: 4/05/2019 2. Controls LEM: Bids are 3. 630T Crane: NDE Inspe draft of comprehensive re shutdown due to structur	ed for Next Month s are due from vendors due from vendors 4/15/2019 ection, Phase 1 Completed, eport received. Crane ral deficiencies ish if RFQ for LEM is required	\$2M \$0M Jan 2019 Apr 2019 Project Risks	1	,	1	1	
iterations after Project/Activity ID Penstock 101290 102790 102820 - 630T Crane	RM Penstock RM Penstock RM Penstock	Ilue reporting p Inspection Pla Contractor pri Engineering c	Mile Activity atform Desig ovide 90% d omments to	stone Status Name n-Supply Cont lesign 90% design su	ract Award Cr	Major cidents Minor cidents	0 0 Planned 21-May-19 19-Auq-19 03-Sep-19	Actual/Forecast 31-May-19* 21-Nov-19* 19-Dec-19*	4. Mech/Elec LEM: Shaft s Work Planne 1. Penstock Platform: Bid: 4/05/2019 2. Controls LEM: Bids are 3. 630T Crane: NDE Inspe draft of comprehensive re shutdown due to structur	ed for Next Month s are due from vendors due from vendors 4/15/2019 ction, Phase 1 Completed, eport received. Crane ral deficiencies	\$2M \$0M Jan 2019 Apr 2019 Project Risks	Initial	2019 Rank	1	Targeted	Rank
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KEY ELEMENTS FOR SUCCESSFUL IMPLEMENTATION OF EARNED VALUE MANAGEMENT SYSTEM

- Involvement and support of Executive Management
- Overall Implementation and Strategy
 - Understand the issues that the Client is facing
 - Understand the requirements Example: Different types of reports
 - Apply creativity
- Explore with Pilot Project Do separate implementation without interfering with the existing system
- Design Reporting based on different layers
- Do not expect Project Controls to 'Wash your Car' & 'Walk your dog'
 - No system can deliver all your needs
 - Be prepared to do some "offline" analysis
- Effectiveness of Project Controls Engineer
 - Open daily dialogue with the project team
 - Act as Facilitator
 - Perform an Intellectual Interrogation
 - Big Picture to Executive Management
- Social Engineering / Human Element
 - Be cognizant of what is working for the organization
 - Bureaucracy



THANK YOU

• Questions?

• Contact E-mail: rohan.mutha@aecom.com

