NEW JERSEY TRANSIT CORPORATION
REQUEST FOR PROPOSAL NO. 15-031

DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND OTHER TECHNICAL SERVICES FOR THE NJ TRANSITGRID PROJECT

NJ TRANSIT

RFP No.15-031 **July 1, 2015**
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND OTHER TECHNICAL SERVICES FOR THE NJ TRANSITGRID PROJECT

ADDENDUM NO.1

To All Proposers

Proposers are advised of the following clarifications, additions and/or revisions to the above referenced RFP. Such clarifications, additions and/or revisions are incorporated into the RFP Documents by means of this Addendum No.1.

Item No. 1 Change CONSULTANT CERTIFICATIONS page 159 of the RFP to read as follows:

The Technical Proposal shall include all certifications and affidavits required under this solicitation (i.e., Acknowledgment of Receipt of Addenda, DBE Forms and Affidavits, Contractors Certificate of Eligibility, Non-Collusion Affidavit, Affidavit of Compliance, Business Registration Certificate, Certification for Contracts, Grants, Loans and Cooperative Agreements, and Disclosure of Investment Activities in Iran.

Attached are the June 24, 2015 pre proposal meeting minutes and Attendance Sign In Sheets

The Technical Proposal Due Date remains 2:00 P.M August 25, 2015

All firms must acknowledge Addendum No.1 by signing the Acknowledgment of Receipt of the Addenda and including the form as part of its Proposal submission. Failure to do so may render a submittal non-responsive.

This concludes Addendum No.1.

Sincerely,

Thomas J. Fusco
Principal Contract Specialist

Request for Proposal Number 15-031

DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE
AND
OTHER TECHNICAL SERVICES
FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

Thomas J. Fusco Principal Contract Specialist welcomed the potential Proposers and opened the meeting. The potential Proposers completed the sign in sheet of which a copy is attached.

The attendees were advised that Communication with NJ TRANSIT shall be through the Contracting Officer or his duly authorized representative. Communications shall be in writing via E-Mail to tfusco@njtransit.com

The attendees were advised that the following are required to be submitted with the Technical Proposal.

Acknowledgement of Receipt of Addenda
Statement of Joint Venture – If Applicable
Non-Collusion Affidavit
Contractors Certification of Eligibility
Affidavit of Compliance (Code of Vendor Ethics)
Certification for Contracts, Grants, Loans and Cooperative Agreements

Disclosure of Investments in Iran

Proposers are reminded as specified in the Request for Proposal a NJ Division of Revenue Business Registration Certificate is required to be submitted prior to execution of a contract for these services.

NJ TRANSIT has formed a Technical Evaluation Committee (TEC). The TEC will review evaluate and score each Technical Proposal against the evaluation criteria found in Attachment "A" of the RFP.

The written technical proposal score will be used by NJ TRANSIT to determine the "competitive range".

Oral Presentations will be requested from at least three (3) qualified Proposers within the competitive range, except NJ TRANSIT may select fewer Proposers if fewer such firms respond to the solicitation or meet the qualifications for the project.
Oral Presentations will provide an opportunity for the Proposer to clarify or elaborate on its written technical proposal.

The TEC will use the Oral Presentations to confirm and/or reassess its understanding of the written technical proposals, and incorporate that information into its evaluation by revising the written technical evaluation scores accordingly.

NJ TRANSIT will request a cost proposal from the highest technically qualified firm and enter into negotiations with the highest technically qualified firm to reach an agreement on the Scope of Services and fees.

If in the opinion of NJTRANSIT a satisfactory Contract cannot be negotiated with a selected firm, NJ TRANSIT will formally end negotiations and initiate negotiations with the next most technically qualified firm.

This negotiation procedure will be followed until a satisfactory Contract is negotiated.

A recommendation for award of the Contract to the Proposer, whose proposal is in the best interest and provides the best value to NJ TRANSIT will be made for approval by NJ TRANSIT's Board of Directors.

NJ TRANSIT has assigned an eighteen percent (18%) **Race Conscious, DBE Goal** of the Gross sum of the contract value.

Jacquelin Rush Gilbert of NJ TRANSITS Office of Business Development gave a brief review of the DBE Sub Contracting Requirements and Business Development Program. The SBE forms only need to be submitted by the successful proposer.

Nick Marton Senior Director NJ TRANSITGrid gave a brief overview of the technical requirements of the project

Thomas J. Fusco opened the floor for questions,

Question: Is the A-1 form for both DBE & Non DBE firms?
Answer: Yes

There were no further questions so the meeting was adjourned.

Note:
The Proposal is due date of 2:30 PM August 25, 2015 remains unchanged.

(1)

Request for Proposal Number 15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND
OTHER TECHNICAL SERVICES FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

Name	Firm	Firm Address	E-mail Address
John Geitner	NJT		
Nick Martin	NJT		
Chris Jeter	NJT		
Jackie Rush-Gilbert	NJT		
Eric DaLeo	NJT		
Bill Pollak	NJT		
Darrell Thornley	CB+I	Charlotte	
Joseph North	STV, Newark, NJ		
Ed Seaman	Halman Int.	Nanuet	
Nick LaRocco	Parsons	100 Broadway NY, NY	
Bob Harvey	AECOM	one Penn Plaza, NYC	
Darrell Massie	IPERC	Fort Montgomery NY	
Amanda Schumacher	T.Y. Lin International	116 William St, NYC	

(2)

Request for Proposal Number 15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND
OTHER TECHNICAL SERVICES FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

Name	Firm	Firm Address	E-mail Address
Amy Greene | DBE	Amy S. Greene Environmental Consl.	4W Alter Ford Blvd Flemington, NJ	
YOSRY BEKHIET	CB & I	200 Horizon Center Trenton, NJ 08691	
Scott Yarpen	Foley Power	355 Centennial Ave Piscataway, NJ 08855	
JEFF SIMMONS	STANTEC	482 Payne Rd, Scarborough Cor Scarborough, ME 04074	
Chitra Radin	Radin Consulting	One Gateway Center, Suite 96 Newark, NJ 07102	
JERRY DiSCIULLO	AECOM	510 CARNEGIE CENTER PRINCETON, NJ 08540	
BOB WOOD	AECOM	"	
Howard Chynsky	SIMCO Engineering (DBE)	80 Maiden Lane, suite 501 NY, NY 10038	
JOEL JACKOWITZ	Jacobs	299 Madison Ave Morristown, NJ 07962	
MIKE WALTON	THE BURNS GROUP	1835 MARKET ST PHILADELPHIA, PA 19103	
Anthony Muñoz	PBS Engineering DBE	2012 Hobart Ave Bronx NY	
Dario Saravia	PBS Engineering DBE	13 Rutledge Ct Plainsboro NJ 08536	
Roxi Carle	CB&I FEDERAL SERVICES	2310 TOWNE CENTER Baton Rouge LA 70806	

Request for Proposal Number 15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND
OTHER TECHNICAL SERVICES FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

Name	Firm	Firm Address	E-mail Address
Craig Goodall	KKCS	18 Dorset Lane Summit NJ 07901	
Al Talcody	Power Engineers	800 Kinderkamack Rd Oradell, NJ 07649	
Al Aliperti	Power Engineers	800 Kinderkamack Rd Oradell, NJ 07649	
Jim Laurita	Gannett Fleming	1037 Raymond Blvd Newark, NJ 07102	
Dan Martin	Gannett Fleming	— cv —	
Steve Zaboticzny	Gannett Fleming	"	
John Mullan	Gannett Fleming	"	
Gary Walker	Amec Foster Wheeler	200 American Metro Blvd Suite 113 Hamilton, NJ 08619	
Kirsty Cronin	Louis Berger	912 Mt. Kemble Ave Morristown, NJ	

(4)

Request for Proposal Number 15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND
OTHER TECHNICAL SERVICES FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

Name	Firm	Firm Address	E-mail Address
Ginger Roetner	HDR	1037 Raymond Blvd Newark, NJ 07102	
Vincent Berlin	RCM Technologies	2500 Mp Clellan Ave Pennsauken NJ 08109	
Joseph Yelpo	Process Equipment	11 Melanie Lane East Hanover N.J.	
KING F. LEE	LS ENG. ASSOC. CORP	150 RIVER ROAD, SUITE E2 MONTVILLE, NJ 07045	
Ron DeMarino	Isolux Corsan, LLC	3755 S. Capital of Texas Hwy. Austin, TX 78704	
EMANUELE INCORVAIA	BURNS & MCDONNELL	100 EDGE ROCK AVE SUITE 305, EAST HANOVER, NJ	
Jeff Casey	BURNS & McDONNELL	108 LEIGUS RD BLD 4 SUITE 100 WALLINGFORD CT	
ARIF MALICK	Malick & Scherer, PC	53 Frontage Drive, Suite Hamilton, NJ	
Michael Duffy	Greener by Design	94 Church St New Brunswick, NJ 08901	

Request for Proposal Number 15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND
OTHER TECHNICAL SERVICES FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

5

Name	Firm	Firm Address	E-mail Address
Pete Davis	HDR	1037 Raymond Blvd Newark NJ 07102	[redacted]
Sarah Zappala	"	"	
Sean Bramhall	Savin Engineers PC.	1150 US Highway 22 Bridgewater NJ	
Ron Pocitti	ALTRAN	1 ADVANTAGE COURT BORDENTOWN, NJ	
ANDREA MUSCATO	ALTRAN	"	
Tom Dykty	ALTRAN	"	
Jeff WEISSMAN	MCFA	21 TANNER ST HADDONFIELD, NJ	
PEDRO PAIARES	ABENGOA	16401 SWINGLEY RIDGE ROAD, STE 650 CHESTERFIELD, MO 63017	
GEORGE PRIJTACH	STANTEC	50 W. 23rd St 2nd Fl New York NY 10010	
JOE PETERS	SARGENT & LUNDY	55 E. MONROE CHICAGO, IL 60603	

(6)

Request for Proposal Number 15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND
OTHER TECHNICAL SERVICES FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

Name	Firm	Firm Address	E-mail Address
DOUGLAS Ray	GZA	104 W 29TH NY NY	[redacted]
PALLAVI LAL	LTK	400 MARKET ST.; SUITE NEWARK, NJ	
Jim Jamieson	UTRS	950 N. Kings Highway Cherry Hill NJ	
Clare Sullivan	MATRIX	(DBE) 26 Columbia Turnpike Florham Park NJ	
Rod Schwass	Jacobs	343 Congress ST Boston MA	
Robert Morin	Ameresco	Framingham MA	
STEPHEN GUGLIELMO	MHPSA	645 MARTINSVILLE RD BASKING RIDGE, NJ 07920	

Request for Proposal Number 15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND
OTHER TECHNICAL SERVICES FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

(7)

Name	Firm	Firm Address	E-mail Address
BRANDON SWARTLEY	STV	1818 MARKET ST., SUITE 1410 PHILADELPHIA PA 19103	[redacted]
Karen Demirchian	R.G. Vanderweil	274 Summer St. Boston, MA 02210	
JOE SULLIVAN	CONCORD ENGR	520 BURNT MILL ROAD VOORHEES NJ	
Ray Kenard Climate Change Mitigation Technologies		1009 Park Ave LLC NY NY	
James Sherman "	" " "	" "	
Paul VanGelder	CHA consulting Inc	6 campus Drive Parsippany NJ	
ADAM ZELLNER	GBO consulting	94 CHURCH STREET New Brunswick, NJ	
Chuck Feinberg	Greenby Design	"	
PETER ROSHRIG	HONEYWELL	101 COLUMBIA RD MORRISTOWN, NJ	

(8)

Request for Proposal Number 15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND
OTHER TECHNICAL SERVICES FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

Name	Firm	Firm Address	E-mail Address
William Cleary	CB&I	6350 S. Fiddlers Green Cir. Greenwood Village, CO 8011	
Evan Doran dba	Promatech Inc.	8008 Rt. 130N Suite 216 Delran NJ, 08075	
S. Jayakumaran	SJH Engineering	3700 Rt. 27 # 201 Princeton NJ 08540	
Mahendra Patel	MP Engineers	252W 37th St. #5E New York, NY	
Bob Fisher	Parsons Brinckerhoff	1600 JFK Blvd Suite 510 Philadelphia PA 19103	
Kelly Chrave	Atkins	11 East 26th Street, 18th Fl NY NY 10010	
Vixa G. Lopez	Robinson Aerial Survey (DBE)	One Gateway Ctr. Ste. 930 Newark, NJ	
Sweta Kashekar	JCMS, Inc. (DBE)	1741 Whitehorse-Mercerville Rd, Mercerville, NJ	
Joel Sonkin	AECOM	605 3rd Avenue New York, NY 10158	

(9

Request for Proposal Number 15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND
OTHER TECHNICAL SERVICES FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

Name	Firm	Firm Address	E-mail Address
Alex Nadolishny	Louis Berger	412 Mt. Kemble Ave Morristown NJ	
FRANK STANTON	Daidone Elect	200 Raymond Blvd Newark, NJ 07105	
Tom Heim	PS&J	67 B Mountain Blvd Ext Warren NJ 07059	
DAN SKIZIM	ISOLUX CORSAN	AUSTIN, TX	
Scott Neumeister	AECOM	510 Carnegie Center Princeton, NJ	
A. Scott Herland	Black & Veatch	11401 Lamar Ave, Overland Park, KS 66211	
KEITH SVENSEN	Hatch Mott MacDonald	111 Wood Ave South Iselin NJ. 08830	
Arthur D Silber	Hatch Mott MacDonald	111 Wood Ave South Iselin, NJ 08830	

(10)

Request for Proposal Number 15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND
OTHER TECHNICAL SERVICES FOR THE
NJ TRANSITGRID PROJECT
June 24, 2015
TIME: 10:30 a.m.
Preproposal Meeting

Name	Firm	Firm Address	E-mail Address
Kenny Jannes	Louis Berger	412 Mount Kemble Ave. Morristown, NJ 07960	[redacted]
MAJDOOD SIDDIQUI	PARSONS BRINCKERHOFF	2 Gateway Center, 18th Flr, Newark, NJ 07102	
Vincent Sorezza	Aldridge-Electric	844 E. Rockland Road Libertyville, IL 60048	

NJ TRANSIT

RFP No.15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND OTHER TECHNICAL SERVICES FOR THE NJ TRANSITGRID PROJECT

July 28, 2015

ADDENDUM NO. 2

To All Proposers

Proposers are advised of the following clarifications, additions and/or revisions to the above referenced RFP. Such clarifications, additions and/or revisions are incorporated into the RFP Documents by means of this Addendum No. 2.

Item No. 1 change section I.GENERAL PROJECT INFORMATION sub article "A" paragraph reference to Insurance to read as follows:

Prior to the execution of this contract by NJ TRANSIT and before commencing any performance hereunder, the Consultant shall provide NJ TRANSIT with the required proof(s) of insurance as set forth in **Section 12** of Exhibit A.

Item No. 2 change section I.GENERAL PROJECT INFORMATION sub article "A" paragraph reference to Code of Ethics to read as follows:

Proposers must avoid all circumstances and conduct which may not constitute actual wrongdoing, or conflict of interest, but might nevertheless appear questionable to the general public, thus compromising the integrity of NJ TRANSIT. All proposers must comply with the NJ TRANSIT Code of Ethics as set forth in **Section 29** of Exhibit A.

Item No. 3 Delete Attachment A Proposal Evaluation Criteria and Add Attachment A Proposal Evaluation Criteria Revised

Item No. 4 Replace the web site listed in section G.DIVISION OF REVENUE with the following http://www.nj.gov/treasury/revenue/gettingregistered.shtml.

The following are questions submitted by CB&I and associated answers:

1. Can proposers have an un-redacted copy of the NJ TRANSITGrid Feasibility Study?

Response: No. Only the successful team will be provided the un-redacted copy of the report.

2. Page 24 of the RFP states that the ""The Consultant Project Manager (PM) shall have demonstrated experience of ten (10) years or more in the design, construction and commissioning of natural gas fired power generation plants in the range of a minimum of 100MW in size with associated transmission and distribution elements as well as an aggregate project value of at least $300 Million. This experience shall also include experience and working knowledge of advanced, smart-grid technologies as a way to improve the reliability, security, and resiliency of the electric grid during a disruptive event." Would NJ TRANSIT consider changing the experience portion of the requirement to read "The Consultant Project Manager (PM) shall have demonstrated experience of ten (10) years or more in the design, construction and commissioning of power generation plants in the range of a minimum of 100 MW in size, including at least three (3) of these years of experience with natural gas fired prime movers, with associated transmission and distribution elements, as well as an aggregate project value of at least $300 Million. This experience shall also include experience and working knowledge of advanced, smart-grid technologies as a way to improve the reliability, security, and resiliency of the electric grid during a disruptive event."?

Response : The focus of this requirement is that the successful team will propose a candidate whose expertise is demonstrated in the design, construction and operation of "Natural Gas Fired Power Generation Plants". As the selected plant fuel supply and power generation technology is reliant upon only natural gas, experience in alternative modes of power generation will not provide the singular focus NJ TRANSIT requires to progress this project.

3. Page 157 of the RFP states under "Qualifications of Individuals" that the ""The Consultant Project Manager is required to have a minimum of ten years (10) years of experience in rail high speed corridor projects, including relevant bridge experience." Does NJ TRANSIT agree that this qualification is not relevant to the Project Manager? If so, can NJ TRANSIT confirm that the Project Manager qualifications are consistent with the required capabilities on page 24 of the RFP, and that the "high speed corridor projects, including relevant bridge experience" qualifications on Page 157 are also not relevant to the Deputy Project Manager position?

Response:
Required Project Manager Capabilities

The Consultant Project Manager (PM) shall have demonstrated experience of ten

(10) years or more in the design, construction and commissioning of natural gas fired power generation plants in the range of a minimum of 100 MW in size with associated transmission and distribution elements as well as an aggregate project value of at least $300 Million. This experience shall also include experience and working knowledge of advanced, smart-grid technologies as a way to improve the reliability, security, and resiliency of the electric grid during a disruptive event.

Additionally, the Project Manager shall have the requisite experience to assist NJ TRANSIT in its regulatory compliance in order to achieve operation and power transmission inter-connection to the regional power grid.

Required Deputy Project Manager Capabilities

The Consultant Deputy Project Manager (DPM) shall have demonstrated experience of ten (10) years or more experience working with commuter rail or inter-city rail environments. Specifically, the DPM shall have experience working with passenger rail design and engineering as related to the civil, structural, geotechnical engineering, design and construction of electrical power transmission/interconnection compatible with existing commuter rail infrastructure in the Project Area. The DPM shall demonstrate requisite prior experience that shall ensure the successful integration of all railroad infrastructure with NJ TRANSITGRID electric power as outlined in this RFP.

4. ATTACHMENT A, PROPOSAL EVALUATION CRITERIA – criteria 1 appears to combine the individually required Project Manager and Deputy Project Manager Capabilities from page 24 of the RFP into a singular evaluation criteria for the Project Manager. We have two questions in regards to this:

a. Can the Project Manager evaluation criteria be based on the Required Project Manager Capabilities on page 24 of the RFP?

Response : Yes

b. Due to the significance of the Required Deputy Project Manager Capabilities on page 24 of the RFP, as well as the integral and critical nature of the rail system work, we believe the rail-related experience and qualifications of the Deputy Project Manager should be individually evaluated in addition to the Project Manager. Can the Deputy Project Manager position be added as a specifically evaluated positon?

Response: Yes, Attachment "A" has been modified , see Item No. 3 of this addenda.

5. Attachment C, Excel Spreadsheet – the upper left hand corner of page 1 of the spreadsheet includes the text "Billable Rate with 164.00% OH + 10% fee". Is NJ TRANSIT setting a maximum overhead rate of 164 percent on this project?

Response: NJ TRANSIT is not setting a maximum overhead rate of 164 percent on this project. The 164% is a placeholder in the excel spreadsheet.

6. Page 18 of the RFP states that "In September, the FTA announced that NJ TRANSIT would receive a $410 million grant to develop the project. NJ TRANSIT is coordinating the project with other FTA-funded activities as part of NJ TRANSIT's Superstorm Sandy Recovery and Resiliency Program." What are the other FTA-funded activities and what amount of NJ TRANSITGrid funding do they include that is additional to the $410 million grant?

Response:
NJ TRANSITGRID
Raritan River
Drawbridge Replacement;
Hoboken Long Slip
Flood Protection;
Delco Lead Safe Haven Storage
and Re-Inspection Facility;
Train Controls -
Wayside Signals, Power &
Communication Resiliency;

Tier III component funding amounts have no bearing upon the progression of the NJ TRANSITGRID Project.

7. Page 29 of the RFP states that "all Project communications, reports and submittals shall conform with programmatic standards and requirements as developed by NJ TRANSIT for the Superstorm Sandy Recovery and Resilience Program". May we have a copy of these standards and requirements?

Response: These requirements will be made available to the successful proposer.

8. Page 160, Cost Proposal Format, Paragraph #2 states the following:
"All proposed expenses will be evaluated to determine their reasonableness and whether they are allowable and allocable. The Federal Transit Administration Cost Standards (Federal Acquisition Regulations Part 31; FAC 84-16, 17, 19) will be used as the guideline in determining the reasonableness of Consultant costs."
Page 162, Cost Proposal Format, Paragraph #1, states the following:
"The Contract will be a cost plus fixed fee type with a maximum amount not to be exceeded. The profit (fixed fee) shall be negotiable on a task-by-task basis and shall not exceed ten percent (10%) on labor overhead and fringe costs; there should be no profit on direct expenses. No overhead burden of profit (fixed fee) is allowed on subcontracting or direct costs."

The last sentence in the above referenced paragraph on page 162 is somewhat confusing. It reads as if fee and G&A are unallowable on subcontracting and other direct costs (ODC's). It also doesn't reference how G&A is allowable for any part of these costs. Our Company utilizes DCMA approved rates for G&A and overhead rates in our Federal government approved Certified Cost Accounting System that allows us to apply allocable fees and G&A to labor, overhead, fringe and all other direct costs, including subcontracts that are associated with cost reimbursable type contracts, in accordance with Federal Acquisition Regulation part 31.2. Is this cost accounting methodology acceptable for this project?

Response NJ TRANSIT does not allow the Prime Consultant to add mark up and profit to the sub-consultants cost. However, the Prime Consultant typically includes in his level of effort the hours necessary to manage and review the sub-consultants participation in the project.

The following is a question submitted by Stantec and the associated answer:

1. In the RFP, on page 175 of the PDF, it states "See Excel Spreadsheet attached" in Attachment C. Can you please confirm whether there are actual Excel Spreadsheets provided as attachments, or if this is just referencing the sample pages in the RFP? If there are spreadsheets, please let me know when I can download them – we did not see these when downloading the other RFP documents.

Response Attachment C is a sample of the Cost proposal that will be requested from the highest technically qualified Proposer.

The Technical Proposal Due Date remains 2:00 P.M August 25, 2015

All firms must acknowledge Addendum No.2 by signing the Acknowledgment of Receipt of the Addenda and including the form as part of its Proposal submission. Failure to do so may render a submittal non-responsive.

This concludes Addendum No.2.

Sincerely,

Thomas J. Fusco
Principal Contract Specialist

Attachment.

NEW JERESY TRANSIT CORPORATION

RFP NO. 15-031

ATTACHMENT A Revised

PROPOSAL EVALUATION CRITERIA

(LISTED IN DESCENDING ORDER OF IMPORTANCE)

PROPOSAL EVALUATION CRITERIA

1. Qualifications & Experience of the Proposal Team Project Manager: Does the proposed project manager for the proposal team have demonstrated experience of ten (10) years or more in the design, construction and commissioning of natural gas fired power generation plants in the range of a minimum of 100 MW in size with associated transmission and distribution elements compatible with NJ TRANSIT's M&E and HBLR lines as well as High Speed Rail transportation systems, as well as an aggregate project value of at least $300 Million. Does this experience also include experience and working knowledge of advanced, smart-grid technologies as a way to improve the reliability, security, and resiliency of the electric grid during a disruptive event.

Additionally, does the Project Manager have the requisite experience to assist NJ TRANSIT in its regulatory compliance in order to achieve operation and power transmission inter-connection to the regional power grid.

2. Qualifications & Experience of the Proposal Team Deputy Project Manager: Does the Consultant Deputy Project Manager (DPM) have demonstrated experience of ten (10) years or more experience working with commuter rail or inter-city rail environments? Specifically, does the DPM have experience working with passenger rail design and engineering as related to the civil, structural, geotechnical engineering, design and construction of electrical power transmission/interconnection compatible with existing commuter rail infrastructure in the Project Area. The DPM shall demonstrate requisite prior experience that shall ensure the successful integration of all railroad infrastructure with NJ TRANSITGRID electric power as outlined in this RFP.

3. Qualifications & Experience of Key Individuals on the Proposal Team: (task leaders, key project staff). Do the proposed task leaders and key staff members have the appropriate background, skills, experience (supported by references) to successfully advance manage and control a multi-million dollar design/engineering effort in providing design and construction assistance of natural gas fired power plants, associated electric power transmission and distribution compatible with NJ TRANSIT's M&E and HBLR lines as well as High Speed Rail transportation systems such as the Amtrak North-east Corridor, as well as commercial utility electric power grids and in accordance with the required capabilities set forth in the RFP?,

4. Experience & Expertise of Firm(s) on the Proposal Team: The Consultant Team must possess a working knowledge and expertise in the areas of Regulatory Compliance as applicable to the registration, certification and operation of Power Generating facilities as well as Transmission and Distribution of Electric Power and in accordance with the requirements set forth in the RFP.

Management and successful completion of NJ TRANSIT and Amtrak sponsored PE, FE and construction projects on the Northeast Corridor and/or NJ TRANSIT's M&E & HBLR lines;

5. Understanding, Approach & Methodology Regarding Scope of Services: Does the written (and oral presentations, if applicable) demonstrate a proper and complete understanding of project and contract scope including unique project requirements? Was the scope for each task developed? Was the written (and oral presentations, if applicable) responsive to the RFP? Were they complete and thorough, clearly organized, well presented and professional? If the Proposer offers reasonable exceptions and modifications to the proposed Scope of Services, did these shorten the time required to complete the work or improve the quality of the work. Has the Proposer demonstrated how its work can satisfy environmental and regulatory compliance requirements for rail projects as prescribed by FTA policies and regulations? Has the Proposer shown how to advance the public outreach component quickly while satisfying Federal requirements for public involvement?

6. Organization, Amount, Allocation, Availability and Proximity of Resources: Are key and support staff readily available without significant travel? Has the proposer committed a sufficient but not excess amount of resources to the project? Do the firms and proposed key individuals appear to be available to the degree necessary to successfully complete our project? Does the proposer/team have sufficient offices, support staff and equipment to sufficiently support the proposed project team? Are the human and physical resources located in close enough proximity to the project site and NJ TRANSIT offices to ensure timeliness, quick response times and proper support? Are the individual firms and proposed staff organized in a logical and proper way? Does the proposal have appropriate person hour allocation for each task?

7. Schedules: Do the task and subtasks schedules show logical task durations, sequencing and progression? Do the schedules provide for adequate review time and milestones that can be used to keep the project on schedule?

8. DBE Participation: Are DBE firms effectively employed to meet the goals?

Sample Reference Check Questions:

1. Was the client satisfied with the performance of consultant's duties and/or the Project Manager?

2. Would the reference(s) hire the firm again?

3. Did the firm satisfactorily achieve the objective of the contract, especially:
   (a) quality product?
   (b) on time completion?
   (c) within budget?

4. Were there any significant problems with the work and how problems were resolved?

5. Was the firm responsive and easy to work with?

Completed reference interview forms will be supplied to all members of the TEC for their review.

NJ TRANSIT

RFP No.15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND OTHER TECHNICAL SERVICES FOR THE NJ TRANSITGRID PROJECT

August 12, 2015

ADDENDUM NO. 3

To All Proposers

Proposers are advised of the following clarifications, additions and/or revisions to the above referenced RFP. Such clarifications, additions and/or revisions are incorporated into the RFP Documents by means of this Addendum No. 3.

Item No. 1 Delete page No.6 of the RFP and add the attached page No.6 Revised.

Item No. 2 Add: Cover Sheet for Exhibit L and SOURCE DISCLOSURE CERTIFICATION FORM Exhibit L attached, to the end of the Exhibit Section of the RFP.

Item No.3 Add: Cover Sheet for Exhibit M. and PUBLIC LAW 2005 CHAPTER 271 Vendor Certification and Political Contribution Disclosure Form Exhibit M. attached, to the end of the Exhibit Section of the RFP.

The following are questions submitted by JACOBS and associated answers:

Q. Page 158 of the RFP requests matrices of hours for the scope of work both by firm and by individual. Subtask 2.1 – Verification of Concept Design requires evaluation of many significantly varied methods of supplying the TransitGrid (reciprocation engines, combined cycle, heat recovery, etc.). It also states that "this effort is a pre-requisite before commencing Preliminary Engineering." We completely agree that this is appropriate. We understand the scope of work needs to be further developed and defined as part of Phase 1, since the level of engineering effort depends upon the selected technology (also note the uncertainty in Subtask 2.2.9 – Signals/Train Control Architecture where many items are list "if any").

Please confirm our understanding that the hour matrices should be for the Concept Validation phase only at this time with the development of effort for advancement of design based on the selected technology and agreed upon rate structures.

A. The scope of work defined in the RFP includes the Concept design Verification subtask as well as the advancement of Preliminary Engineering to the 20% level. Consequently,

interested firms must provide a reasonable estimate to both subtasks including hours or resource loading. The selection of a particular generation technology does not preclude advancement of design for transmission and distribution, fundamental control architecture, baseline facility design (enclosure) and interconnection with NJT Mason substation and Amtrak sub-41.

Regarding Subtask 2.2.9, it is incumbent on the prospective designer to evaluate and recommend any changes to existing Signals/ Train Control Architecture resulting from implementation of resiliency aspects associated with the Project.

Q. Similar to Question 1), the RFP requests many required DBE forms that tie to specific scopes of work and contract values. DBE participation levels would be dependent upon the results of the Phase 1 Validation of Concept, and would be good faith estimates at this time. Please confirm the desired forms for the Technical Proposal Submission, and that estimated values are acceptable until the scope is confirmed in Subtask 2.1.

A. As noted above for question 1, interested firms must provide a reasonable estimate to all subtasks including hours or resource loading as required in this RFP.

Q. We understand that questions are due to NJ TRANSIT by August 14, 2015 and the RFP response is due August 25, 2015. When can we expect to receive responses to any submitted questions and clarifications, and will NJ TRANSIT consider a reasonable extension to the submittal deadline to allow reasonable time to adapt our submittal to these clarifications?

A. Responses to questions are provided via this Addendum 3. No extension at this time.

Q. Scope of work pages 91 and 92 list specific design elements that are to be included as part of the design of Amtrak facilities. This detailed list i.e cable list, electrical details, hardware, steel details and bill of materials are typically outside a 20% design scope. What level of design is anticipated for the Amtrak facilities?

A. As noted in the RFP, the expected level of design is 20%. Prospective Design Consultants are advised to provide" 20% plans and specifications and perform all calculations for the Electrical Work " commensurate with this level of design detail.

Q. Can we double-side the proposal submission?

A. Yes

Q. It appears that the new switching station contemplated next to Substation No. 41 was labeled Substation No. 42. Substation No. 42 is further up the line from this location. Please confirm that there is no anticipated work at the existing Amtrak Substation No. 42.

A. As noted in the RFP, "The existing transmission circuits emanating from the north side of existing Substation #41 (#141, 241, 341, and 441), would be extend/interconnected with the exiting circuit heading east toward Substation 42. "

The following are questions submitted by AECOM and associated answers:

Q. Resume length – ask if they have a length in mind and if "Work History" is actually history of firms for which the individuals have work?

A. *The resume work history, should provide evidence of applicable experience that supports the goals and deliverables as outlined in the RFP.*

Q. Incident Transportation Plan (check to see if it is in public domain first, if not, ask for it).

A. *The Incident Transportation Plan is part of the original Grant Application and as such is available as supporting documentation, (Appendix B2, "Islanded Operations"), for the grant application from the FTA.*

Q. When does NJ TRANSIT expect design control plans to be submitted?

A. *The Consultant shall submit a draft of the Design Control Plan eight weeks after NJ TRANSIT considers the Project PMP to be final, incorporating comments from NJ TRANSIT including comments from the FTA representative, into the Project PMP.*

Q. What is the anticipated date of the EIS ROD?

A. Current Schedule holds February 2017.

Q. Is property acquisition for this project anticipated?

A. Property Acquisition is being accomplished under a separate action outside of the Project.

Q. Please provide clarification on the Phase II completion date? At the pre-bid it was stated it was 2021. Is it the beginning or end of 2021?

A. Close-out is currently projected for the end of 2021.

Q. EMS/SCADA is included in Task 2.2.8, but there is nothing in the deliverables regarding it. What is the expectation from the consultant?

A. *As detailed in the RFP, the Consultant shall provide the requisite information as outlined below compatible with 20% design;*

Energy Management System/SCADA

- *An EMS and SCADA system shall be installed for the NJ TransitGrid separate of any existing information systems or rail operation systems currently in place.*
- *The EMS and SCADA system shall have an HMI to facilitate monitoring and man-in-the-loop control.*
- *Full backups of the EMS and SCADA systems shall exist in a geographically diverse location and located above the DBT flood level.*
- *EMS and SCADA systems shall monitor all critical parameters of the microgrid to manage frequency, voltage, energy/power production, load shedding, microgrid activation, generation asset optimization, and synchronization in accordance with ANSI/NEMA C84.1-2006 and IEEE 1547 standards.*
- *The EMS shall provide manual and automated start capabilities, including black start.*
- *EMS and SCADA shall provide automated and manual plant control capabilities of assets at the central power plant based on market data and market requirements.*
- *Control profiles based on current market structures and data shall be created to provide appropriate control to safely meet market obligations.*
- *Provisions for manual microgrid switchover (for testing or preventative measure purposes) shall be included to disconnect from utility during normal operations.*

- *Hierarchical controls shall be implemented so that the EMS can manage real and reactive power in a holistic fashion, maintain adequate reserve margins, and properly respond to load fluctuations.*
- *All parameters and measurements shall be archived using data historian functionality.*
- *Data historians shall be complete with data filters based on time and value rate of change, configurable sampling rates, and shall either save all historical data in provisions for long term storage or have a round robin database with sufficient storage.*
- *Data acquisition equipment shall contain set, get, forced, and unforced capabilities.*
- *All EMS/SCADA field equipment shall be protected by environmentally hardened enclosures to protect against the elements, tampering and DBT conditions.*
- *The SCADA system shall extend to all isolated facilities for monitoring purposes and at minimum shall monitor generator real/reactive power output, building voltage and current draw, fuel levels, and state of renewable energy output (if any).*
- *Continuous, 24/7 monitoring shall be conducted by qualified operations personnel.*
- *A paging system shall be put in place to provide monitoring and alert capabilities via a paging system so operations and maintenance personnel can quickly respond to failures or potential problems.*
- *Remote access to the EMS/SCADA shall permit remote monitoring, diagnosis, troubleshooting, software/firmware updating and limited control during normal and emergency conditions.*
- *Remote access functionality must satisfy cyber security best practices and recommendations (reference cyber security section).*
- *Persistent remote access connections shall not be permitted and physically disconnected when not in use.*
- *Remote connections shall be controlled with connection timeouts and strong encryption and authentication methods.*

Preliminary design plans, specifications and cost estimates shall be prepared for the necessary modifications to communications facilities affected by this project. Cable routing, communications, bungalow layouts, and typical details shall be shown. The work shall be performed in accordance with applicable Federal and State requirements, PJM and PSE&G requirements as well as NJ TRANSIT standards and Amtrak standards as applicable and subject to review and approval by all agencies as applicable. Installation instructions and plans for the communication system configuration shall be provided. Furthermore and as required by this sub-task;

Deliverables:

Performance Specification for Communications Backbone Power Management Infrastructure, Radio Systems, Emergency Alarm Stations, Fire Alarm Systems. – draft and final.

Q. Where is EMS/SCADA to be located?

A. EMS and SCADA shall provide automated and manual plant control capabilities of assets at the central power plant. Additionally, full backups of the EMS and SCADA systems shall exist in a geographically diverse location and located above the DBT flood level. The SCADA system shall extend to all isolated facilities for monitoring purposes and at minimum shall monitor generator real/reactive power output, building voltage and current draw, fuel levels, and state of renewable energy output (if any).

Q. Page 69 of the RFP, what is the meaning of the base case scenario as it relates to the Morris and Essex Trains? Isn't that portion of the M&E that the TransitGrid

energizes in the island mode? And if yes, why only using diesel powered trains and not using the overhead electric power?

A. *See the footnote associated with Base Case Description, "Assume these services are operational 24 hours after power outage begins. This allows time to position transit equipment and operating personnel. If the outage is tied to a weather condition, transit equipment may be stored someplace other than in its normal location."*

Q. Do disabled-Veteran-Owned SBEs count as part of the DBE Goal

A. No only, firms that are listed in the New Jersey Unified Certification Program(NJUCP) www.njucp.net as a DBE firm are accepted towards the Goal

Q. On Page 36 – Timescale shall be shown in calendar days. Are all of the CPM schedule activities going to use calendar days (7 days/week) or work days (5days/week) for PHASE I and PHASE II?

A. *Currently, the CPM schedules will utilize calendar days for Phases I and II.*

The Technical Proposal Due Date remains 2:00 P.M August 25, 2015

All firms must acknowledge Addendum No.3 by signing the Acknowledgment of Receipt of the Addenda and including the form as part of its Proposal submission. Failure to do so may render a submittal non-responsive.

This concludes Addendum No.3.

Sincerely,

Thomas J. Fusco
Principal Contract Specialist

Attachments.

ATTACHMENTS

Proposal Evaluation Criteria – Attachment A

Proposal Format – Attachment B

Cost and Fee Recap by Firm/Task – Attachment C

PAECETRAK Data Management System; Attachment D reconcile

EXHIBITS

A. NJ TRANSIT Professional Services Agreement
B. Travel & Business Reimbursement Guidelines
C. Equal Employment Opportunity Requirements
D. DBE Requirements
E. Acknowledgement of Receipt of Addenda
F. Statement of Joint Venture
G. Non-Collusion Affidavit
H. Contractors Certification of Eligibility
I. Affidavit of Compliance (Code of Vendor Ethics)
J. Certification for Contracts, Grants, Loans and Cooperative Agreements
K. Disclosure of Investments in Iran
L. Source Disclosure
M. PUBLIC LAW 2005 CHAPTER 271 Vendor Certification and Political Contribution Disclosure Form

Rev 2 8-11-2015

NEW JERSEY TRANSIT CORPORATION
REQUEST FOR PROPOSAL (RFP) NO. 15-031

EXHIBIT L. Source Disclosure

Rev 2 8-11-2015

N.J.S.A 52:34-13.2 CERTIFICATION

SOURCE DISCLOSURE CERTIFICATION FORM

Consultant:_____

Contract Number:15-031

I hereby certify and say:

I have personal knowledge of the facts set forth herein and am authorized to make this Certification on behalf of the Consultant.

The Consultant submits this Certification as part of its proposal in response to the referenced solicitation issued by NJ TRANSIT, in accordance with the requirements of N.J.S.A. 52:34-13.2.

The following is a list of every location where services will be performed by the consultant and all sub-consultants.

Consultant or Sub-consultant Performance Location[s] by Country	Description of Services

Any changes to the information set forth in this Certification during the term of any contract awarded under the referenced solicitation or extension thereof will be immediately reported by the Consultant to the Director of Contracts, NJ TRANSIT Corporation, One Penn Plaza East, Newark, NJ 07105.

I understand that, after award of a contract to the Consultant, it is determined that the Consultant has shifted services declared above to be provided within the United States to sources outside the United States prior to a written determination by the Contracting Officer, that the services can not be performed in the United States, the Consultant shall be deemed in breach of contract, which contract will be subject to termination for cause pursuant to Article 14 of the Professional Services Agreement.

I further understand that this Certification is submitted on behalf of the Consultant in order to induce NJ TRANSIT to accept a proposal, with knowledge that NJ TRANSIT is relying upon the truth of the statements contained herein.

I certify that, to the best of my knowledge and belief, the foregoing statements by me are true. I am aware that if any of the statements are willfully false, I am subject to punishment.

Consultant:_____

[Name of Organization or Entity]

By:_____

Title:_____

Print Name:_____ Date:_____

Rev 2 8-11-2015

NEW JERSEY TRANSIT CORPORATION
REQUEST FOR PROPOSAL (RFP) NO. 15-031

EXHIBIT M

PUBLIC LAW 2005 Vendor Certification and CHAPTER 271 Political Contribution DisclosureForm Contract Reference: _____ Vendor: _____

At least ten (10) days prior to entering into the above-referenced contract, the Vendor must complete this Certification and Disclosure Form, in accordance with the directions below and submit it to the State contact for such contract.

Please note that the disclosure requirements under Public Law 2005, Chapter 271 are separate and different from the disclosure requirements under Public Law 2005, Chapter 51 (formerly Executive Order 134). Although no vendor will be precluded from entering into a contract by any information submitted on this form, a vendor's failure to fully, accurately and truthfully complete this form and submit it to the appropriate State agency may result in the imposition of fines by the New Jersey Election Law Enforcement Commission.

Disclosure

Following is the required Vendor disclosure of all Reportable Contributions made in the twelve (12) months prior to and including the date of signing of this Certification and Disclosure to: (i) any State, county, or municipal committee of a political party, legislative leadership committee, candidate committee of a candidate for, or holder of, a State elective office, or (ii) any entity that is also defined as a "continuing political committee" under N.J.S.A. 19:44A-3(n) and N.J.A.C. 19:25-1.

The Vendor is required to disclose Reportable Contributions by: the Vendor itself; all persons or other business entities owning or controlling more than 10% of the profits of the Vendor or more than 10% of the stock of the Vendor, if the Vendor is a corporation for profit; a spouse or child living with a natural person that is a Vendor; all of the principals, partners, officers or directors of the Vendor and all of their spouses; any subsidiaries directly or indirectly controlled by the Vendor; and any political organization organized under section 527 of the Internal Revenue Code that is directly or indirectly controlled by the Vendor, other than a candidate committee, election fund, or political party committee.

"Reportable Contributions" are those contributions that are required to be reported by the recipient under the "New Jersey Campaign Contributions and Expenditures Reporting Act," P.L. 1973, c.83 (C.19:44A-1 et seq.), and implementing regulations set forth at N.J.A.C. 19:25-10.1 et seq. As of January 1, 2005, contributions in excess of $300 during a reporting period are deemed "reportable."

Rev: 02/07/2006 DPP c271 C&D Page 1 of 2 PUBLIC LAW 2005 CHAPTER 271 Vendor: Name and Address of Committee to Which Contribution Was Made	Date of Contribution	Amount of Contribution	Contributor's

Indicate "none" if no Reportable Contributions were made. Attach Additional Pages As Needed

NJ TRANSIT

RFP No.15-031
DESIGN, ENGINEERING, CONSTRUCTION ASSISTANCE AND OTHER TECHNICAL SERVICES FOR THE NJ TRANSITGRID PROJECT

August 13, 2015

ADDENDUM NO. 3 Rev-1

To All Proposers

Proposers are advised of the following clarifications, additions and/or **revisions** to the above referenced RFP. Such clarifications, additions and/or revisions are incorporated into the RFP Documents by means of this Addendum No. 3 rev-1.

The original attachments to Addenda No.3 became distorted when scanned. Please use the attached forms in their place.

Please be reminded the Prime Consultant as well as each sub consultant must fill out Exhibit L Source Disclosure form and the Prime Consultant will submit them with their Proposal.

This concludes Addendum No.3 rev-1.

Sincerely,

Thomas J. Fusco
Principal Contract Specialist

Attachments.

Rev 2 8-11-2015

NEW JERSEY TRANSIT CORPORATION
REQUEST FOR PROPOSAL (RFP) NO. 15-031

EXHIBIT L. Source Disclosure

Rev 2 8-11-2015

N.J.S.A 52:34-13.2 CERTIFICATION

SOURCE DISCLOSURE CERTIFICATION FORM

Consultant:_____

Contract Number: 15-031

I hereby certify and say:

I have personal knowledge of the facts set forth herein and am authorized to make this Certification on behalf of the Consultant.

The Consultant submits this Certification as part of its proposal in response to the referenced solicitation issued by NJ TRANSIT, in accordance with the requirements of N.J.S.A. 52:34-13.2.

The following is a list of every location where services will be performed by the consultant and all sub-consultants.

Consultant or Sub-consultant
Description of Services
Performance Location[s] by Country

Any changes to the information set forth in this Certification during the term of any contract awarded under the referenced solicitation or extension thereof will

be immediately reported by the Consultant to the Director of Contracts, NJ TRANSIT Corporation, One Penn Plaza East, Newark, NJ 07105.
I understand that, after award of a contract to the Consultant, it is determined that the Consultant has shifted services declared above to be provided within the United States to sources outside the United States prior to a written determination by the Contracting Officer, that the services cannot be performed in the United States, the Consultant shall be deemed in breach of contract, which contract will be subject to termination for cause pursuant to Article 17 of the Professional Services Agreement.

I further understand that this Certification is submitted on behalf of the Consultant in order to induce NJ TRANSIT to accept a proposal, with knowledge that NJ TRANSIT is relying upon the truth of the statements contained herein.

I certify that, to the best of my knowledge and belief, the foregoing statements by me are true. I am aware that if any of the statements are willfully false, I am subject to punishment.

Consultant: _____
[Name of Organization or Entity]

By: _____
Title: _____

Print Name: _____ Date: _____

Rev 2 8-11-2015

NEW JERSEY TRANSIT CORPORATION
REQUEST FOR PROPOSAL (RFP) NO. 15-031

EXHIBIT M

PUBLIC LAW 2005 Vendor Certification and CHAPTER 271 Political Contribution Disclosure Form

PUBLIC LAW 2005 Vendor Certification and CHAPTER 271 Political Contribution DisclosureForm Contract Reference: _____ Vendor: _____

At least ten (10) days prior to entering into the above-referenced contract, the Vendor must complete this Certification and Disclosure Form, in accordance with the directions below and submit it to the State contact for such contract.

Please note that the disclosure requirements under Public Law 2005, Chapter 271 are separate and different from the disclosure requirements under Public Law 2005, Chapter 51 (formerly Executive Order 134). Although no vendor will be precluded from entering into a contract by any information submitted on this form, a vendor's failure to fully, accurately and truthfully complete this form and submit it to the appropriate State agency may result in the imposition of fines by the New Jersey Election Law Enforcement Commission.

Disclosure

Following is the required Vendor disclosure of all Reportable Contributions made in the twelve (12) months prior to and including the date of signing of this Certification and Disclosure to: (i) any State, county, or municipal committee of a political party, legislative leadership committee, candidate committee of a candidate for, or holder of, a State elective office, or (ii) any entity that is also defined as a "continuing political committee" under N.J.S.A. 19:44A-3(n) and N.J.A.C. 19:25-1.

The Vendor is required to disclose Reportable Contributions by: the Vendor itself; all persons or other business entities owning or controlling more than 10% of the profits of the Vendor or more than 10% of the stock of the Vendor, if the Vendor is a corporation for profit; a spouse or child living with a natural person that is a Vendor; all of the principals, partners, officers or directors of the Vendor and all of their spouses; any subsidiaries directly or indirectly controlled by the Vendor; and any political organization organized under section 527 of the Internal Revenue Code that is directly or indirectly controlled by the Vendor, other than a candidate committee, election fund, or political party committee.

"Reportable Contributions" are those contributions that are required to be reported by the recipient under the "New Jersey Campaign Contributions and Expenditures Reporting Act," P.L. 1973, c.83 (C.19:44A-1 et seq.), and implementing regulations set forth at N.J.A.C. 19:25-10.1 et seq. As of January 1, 2005, contributions in excess of $300 during a reporting period are deemed "reportable."

Rev: 02/07/2006 DPP c271 C&D Page 1 of 2 PUBLIC LAW 2005 CHAPTER 271 Vendor: ___ Name and Address of Committee to Which Contribution Was Made	Date of Contribution	Amount of Contribution	Contributor's Name

Indicate "none" if no Reportable Contributions were made. Attach Additional Pages As Needed

Table of Contents

APPENDICES

ATTACHMENTS

Proposal Evaluation Criteria – Attachment A
Proposal Format – Attachment B
Cost and Fee Recap by Firm/Task – Attachment C
PAECETRAK Data Management System; Attachment D reconcile

EXHIBITS

A. NJ TRANSIT Professional Services Agreement
B. Travel & Business Reimbursement Guidelines
C. Equal Employment Opportunity Requirements
D. DBE Requirements
E. Acknowledgement of Receipt of Addenda
F. Statement of Joint Venture
G. Non-Collusion Affidavit
H. Contractors Certification of Eligibility
I. Affidavit of Compliance (Code of Vendor Ethics)
J. Certification for Contracts, Grants, Loans and Cooperative Agreements
K. Disclosure of Investments in Iran

I. GENERAL PROJECT INFORMATION

I. GENERAL PROJECT INFORMATION

A. The New Jersey Transit Corporation (NJ TRANSIT) is issuing this Request for Proposal (RFP) to solicit professional firms for engineering work associated with the New Jersey TransitGrid.

This project is being implemented under Federal Transit Administration's Resilience Projects in response to Superstorm Sandy as shown in the Federal Register: Volume 79, No. 214 dated November 5, 2014.

The goal of this RFP is to engage a Consultant to provide design, engineering, and construction assistance, as well as other technical services, to support the development of "NJ TRANSITGRID" – a first-of-its-kind microgrid system capable of providing reliable power to support certain critical transit infrastructure supporting rail systems operated by NJ TRANSIT and the National Railroad Passenger Corporation ("Amtrak").

This contract will be divided into two distinct phases:

Phase I. Conceptual and Preliminary Design (0%- 20%)
Phase II. Construction Assistance/Engineering Support

Costs associated with the various Phases and Tasks will be negotiated and a fixed, not-to exceed cost will be established. Additional or unauthorized costs incurred by the Consultant will not be reimbursed.

NJ TRANSIT reserves the right to reject any and all proposal(s). Contract award is subject to the availability of funds and Consultant agreement to NJ TRANSIT terms and conditions.

All proposers are notified that NJ TRANSIT reserves the right to delete or modify any task from the Scope of Services at any time during the course of the contract. NJ TRANSIT also reserves the right to approve all subconsultants.

Prior to the execution of this contract by NJ TRANSIT and before commencing any performance hereunder, the Consultant shall provide NJ TRANSIT with the required proof(s) of insurance as set forth in Section 11 of Exhibit A.

All proposers are notified that it is NJ TRANSIT policy that Consultants who do or may do business with NJ TRANSIT must avoid all situations where proprietary or financial interest, or the opportunity for financial gain could lead a NJ TRANSIT officer or employee to secure favored treatment for any organization or individual. Proposers must avoid all circumstances and conduct which may not constitute actual wrongdoing, or conflict of interest, but might nevertheless appear questionable to the general public, thus compromising the integrity of NJ TRANSIT. All proposers must comply with the NJ TRANSIT Code of Ethics as set forth in Section 27 of Exhibit A.

In addition, proposers are advised that communications with NJ TRANSIT that in any way relates to this project shall be conducted with or through the authorized representative of the Contracting Officer in NJ TRANSIT's Division of Procurement. All other contacts are strictly prohibited and are considered improper. Proposers are advised that violation of this prohibition may result in the removal of the firm from consideration for this contract and possible suspension/debarment.

B. ANTICIPATED CONSULTANT SELECTION SCHEDULE

Action	Date
Advertise Request for Statements of Qualifications/Expressions of Interest	
Solicit Proposals from Shortlisted Firms	
Pre-Proposal Conference	
Requests for Information Due	
Proposal Due Date	
Oral Presentations	
Selection of Firm	
Begin Negotiations	
Board of Directors' Authorization	
Notice to Proceed	

PRE-PROPOSAL CONFERENCE

In order to discuss the project and for addressing questions, NJ TRANSIT will hold a Pre-Proposal Conference on _____ at 10:00AM in the Board Room at NJ TRANSIT Headquarters, located at One Penn Plaza East, Newark, New Jersey 07105, which is adjacent to Newark Penn Station. The location is easily accessible from Newark Liberty International Airport by AirTrain service connecting to Newark Penn Station. To obtain driving directions please go to the NJ TRANSIT website at www.njtransit.com.

Attendance at the Pre-Proposal Conference is highly recommended but not mandatory. Recipients of this RFP that do not attend may be at a disadvantage when submitting a proposal.

C. REQUEST FOR INFORMATION AND ADDENDA

The firm shall examine carefully the Proposal package and conditions affecting the work. By submitting a proposal, the firm acknowledges that it has carefully examined the proposal package and satisfied itself as to the conditions affecting the work. NJ TRANSIT assumes no responsibility for any conclusions or interpretations made by the firm on the basis of the information made available by NJ TRANSIT. To be given consideration, all such inquires must be received in writing no later than (ten) 10 business days before the RFP due date and must reference contract name and number, section and page number.

Inquiries regarding the Proposal Package shall be submitted in writing to NJ TRANSIT at the following address:

NJ TRANSIT Corporation
Procurement Department
One Penn Plaza East, 6th Floor
Newark, New Jersey 07105-2246
RE: RFP No. 15-031
Attn: Thomas J. Fusco
TFusco@njtransit.com

Any response that NJ TRANSIT may choose to make will be by a written addendum to the RFP and sent to all listed holders of the Proposal Package. NJ TRANSIT will not be bound by any informal explanation, clarification, or interpretation, oral or written, by whomever made, that is not incorporated into an addendum. Copies of all such Addenda will be mailed to each firm. Receipt of the Addenda by the firm shall be acknowledged as specified below.

A firm's failure to request a clarification, interpretation, correction or amendment will preclude such firm from, thereafter, claiming any ambiguity, inconsistency or error which should have been discovered by a reasonably prudent firm.

NJ TRANSIT reserves the right to amend the proposal package prior to the date set for receipt of proposals. Such revisions, if any, will be announced by addenda to this Request for Proposal. Copies of such addenda as may be issued will be furnished to all prospective firms. The date set for receipt of proposals may be postponed by such number of days as in the opinion of the Contracting Officer will enable firms to revise their proposal forms. In such cases, the addenda will include the new date for receipt of proposals.

Firms are required to acknowledge receipt of all addenda by signing the “Acknowledgement of Receipt of Addenda" form. This form (Exhibit F) shall be included as part of the technical proposal. Failure to acknowledge receipt of all addenda may render proposals non-responsive.

D. JOINT VENTURE

A firm consisting of more than one business entity must clearly identify itself in the proposal as a joint venture. Each party to a joint venture shall provide financial data (i.e.: financial statement, D&B report, etc.) as a separate business entity. Each party to a joint venture shall bear, jointly and severally, the entire responsibility for contract performance.

E. DBE INVOLVEMENT

DISADVANTAGED BUSINESS ENTERPRISE (DBE) GOAL ASSIGNMENT

As an aid in meeting the commitment of its Disadvantaged Business Enterprise (DBE) Program, NJ TRANSIT has assigned a Race Conscious 18% DBE goal on the gross sum amount of the bid or contract for DBE subcontracting participation. All New Jersey Unified Certification Program (NJUCP) certified DBE firms, including suppliers, are eligible to participate in this contract.

NJ TRANSIT's DBE Program is accorded the same priority as compliance with all other legal obligations required by the USDOT. Consultants shall comply with the DBE Program requirements in the award and administration of NJ TRANSIT contracts. Failure by the Consultant to carry out these requirements shall constitute a breach of the contract, which may result in the termination of the contract or other such remedy, as NJ TRANSIT deems appropriate.

The Consultant shall refer to the DBE Requirements for Federally Funded Procurement Activities (Exhibit D) included in the RFP for the requirements concerning the DBE obligations and mandatory submissions for this contract. In accordance with those requirements, the Consultant shall identify all DBE and Non-DBE subconsultants and suppliers proposed to participate in and solicited for this contract, and complete and submit the mandatory required forms (A, A1, A2) and any applicable supplemental forms (AA, AA1, AA2) with their proposal or within seven (7) calendar days of the proposal due date. Consultants are strongly encouraged to submit these forms with the proposal to prevent delay of award. Consultants utilizing DBE firms and/or suppliers to participate in this contract shall also submit the mandatory Forms B and BB if applicable and a NJUCP DBE certification letter for each DBE firm/supplier in accordance with the same time frame indicated above. All forms shall be completed entirely with no blank fields.

Any questions regarding the DBE requirements or the mandatory required forms for this contract should be directed to:

Ms. Jacquelin Rush-Gilbert
Senior Contract Compliance Specialist
973-491-8061
JRush-Gilbert@njtransit.com

F. EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

In addition to the above DBE requirements, Consultants will be required to comply with State Equal Employment Opportunity requirements contained in N.J.S.A. 10:5-31 et seq. (P.L. 1975, c.127) and N.J.A.C. 17:27.

G. DIVISION OF REVENUE

In accordance with N.J.S.A. 52:32-44, all New Jersey and out of state business organizations must obtain a Business Registration Certificate (BRC) from the Department of Treasury, Division of Revenue prior to the time a contract is awarded or authorized by NJ TRANSIT. The business registration form (form NJ-REG) can be found online at: http://www.state.nj.us/treasury/revenue/gettingregistered.htm#busentity.

Accordingly, the proposer should submit with its proposal the Business Registration Certificates for all team members, but no later than the date of contract award.

H. DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

Pursuant to N.J.S.A. 52:32-55 et seq., a Proposer that, at the time of bid opening, is identified on a list created pursuant to such law by the New Jersey Department of the Treasury as a person or entity engaging in investment activities in Iran as described in such law, shall be ineligible to, and shall not, propose on or enter into a contract with NJ TRANSIT. As required by such law, the Proposer must complete the certification with its Proposal to attest under penalty of perjury, that neither the person or entity nor any of its parents, subsidiaries or affiliates is identified on the New Jersey Department of Treasury's Chapter 25 list as a person or entity engaging in investment activities in Iran. Failure to complete the certification will render the proposal non-responsive.

I. TECHNICAL EVALUATION COMMITTEE

A Project Technical Evaluation Committee (TEC) comprised of NJ TRANSIT staff will be responsible for reviewing written proposals and oral presentations, and recommending the project Consultant. The TEC will analyze the submitted technical proposals, which are to include project manpower estimates, for the respective phases and tasks outlined in the Scope of Services. In order to adequately evaluate the capability of submitting firms or team of firms, the proposal must address all tasks.

J. MODIFICATION OR WITHDRAWAL

Modifications of proposals already submitted shall be submitted in a sealed envelope, clearly marked with contract name and number, date of opening and name of firm. Firms shall assume that its failure to comply with these requirements may result in the modification being opened prematurely, or not opened at all.

Proposals may be withdrawn at any time prior to the time specified for the opening of proposals by filing a written withdrawal with NJ TRANSIT, duly executed by the firm or its authorized representative. The withdrawal of a proposal does not prejudice the right of the firm to file a new proposal. Withdrawals received after the time specified for the opening of proposals will not be considered nor may any proposal be withdrawn after that time.

K. DISQUALIFICATION OF FIRMS

Submission of more than one (1) proposal from an individual, firm, partnership, corporation or combination thereof under the same or different names shall be cause for disqualification of the proposals submitted by such entities. Reasonable grounds for believing that any individual, firm, partnership, corporation or combination thereof is interested as a principal in more than one (1) proposal for the procurement contemplated may cause the rejection of all proposals submitted by such individual, firm, partnership, corporation or combination thereof.

II. PROJECT BACKGROUND AND DESCRIPTION

New Jersey Transit Corporation ("NJ TRANSIT") is issuing this Request for Proposal (RFP) to engage a Consultant to provide preliminary design, engineering, and construction assistance, as well as other technical services, to support the development of "NJ TRANSITGRID" – a first-of-its-kind microgrid system capable of providing reliable power to support certain critical transit infrastructure supporting rail systems operated by NJ TRANSIT and the National Railroad Passenger Corporation ("Amtrak").

NJ TRANSIT intends to issue two separate Consulting Requests for Proposals (RFP). This RFP advances a scope of work that includes: a central gas fired power plant and associated 230kv substation; a 138kv frequency converter and associated substation as well as reconstruction of Amtrak's substation #41; associated power distribution systems along NJ TRANSIT right-of-way connecting to NJ TRANSIT's Mason

substation located in Kearny, NJ, and to several Hudson-Bergen Light Rail substations; natural gas transmission lines; and connections to the PJM commercial grid.

Subsequently, a second RFP is contemplated to be issued by NJ TRANSIT, advancing a scope of work that includes: fuel cell, solar power generation; distributed generation systems at several NJ TRANSIT multi-modal facilities, bus garages and ferry terminals.

Under this RFP NO. 15-031, the Consultant would provide: (1) design criteria development and preliminary engineering; (2) performance specifications; (3) drawings; (4) bid packaging for the procurement of a design build contract; and (5) construction assistance support, including final design/engineering reviews for the project.

The breadth of expertise required from the Consultant team will include all relevant technical disciplines, familiarity with electric power design/construction procurement, familiarity with operations/maintenance services procurement; experience with the New Jersey Board of Public Utilities (NJBPU), PJM experience, power generation market and financial analysis, cyber-security, and knowledge of the impacts of working within an operating railroad environment.

The Project is partially funded by the Federal Transit Administration and is therefore required to follow the federal NEPA process. NJ TRANSIT has engaged a team led by BEM Corp. to develop the NEPA documents as well as preparation of necessary permitting documents.

Need for Project

Superstorm Sandy significantly impacted New Jersey's public transit systems. Commuter rail service was disrupted for months in what has been described by the President's Hurricane Sandy Rebuilding Task Force as "the worst disaster for public transit systems (e.g., bus, subway, commuter rail) in the nation's history." NJ TRANSIT's rail network experienced substation inundation, track washouts, downed catenary wires, and damage to signal and communications systems. Prolonged and

diffused electrical outages also significantly hampered the system's recovery. As the heaviest traveled portion of the Northeast Corridor, damage to NJ TRANSIT's systems had significant ripple effects across the region, impacting thousands of customers and doubling or tripling commuter travel time.

Since Superstorm Sandy, NJ TRANSIT has focused on making immediate repairs to restore service, planning for long-term repair and replacement of key NJ TRANSIT assets, and identifying opportunities to incorporate mitigation and resilience elements, allowing the system to better withstand storm surge associated flooding from future extreme weather events and other hazards.

NJ TRANSIT's energy systems and ability to power locomotives, stations, and critical facilities, however, remain vulnerable to future outages. Superstorm Sandy, Hurricane Irene, Hurricane Floyd, the 2003 Northeast Blackout, and other events demonstrate that a reliable source of electric power for traction, signals, switches, and railroad communications, a key component of system-wide resiliency remains beyond NJ TRANSIT's and Amtrak's control. New and innovative solutions are needed to address transit agencies' energy vulnerabilities.

Project Development

To address energy vulnerabilities, on August 19, 2013, NJ TRANSIT, the US Department of Energy ("USDOE"), and the New Jersey Board of Public Utilities ("NJBPU") entered into a Memorandum of Understanding to collaborate to develop and conceptually design an advanced microgrid system known as "NJ TRANSITGRID" in consultation with USDOE's Sandia National Laboratories ("Sandia").

Under the terms of the Memorandum of Understanding, NJ TRANSIT, USDOE, and NJBPU agreed to study the energy needs of NJ TRANSIT's commuter operations in the Northeast region of New Jersey that provide critical interconnections between New Jersey communities and New York City, and that form part of the larger Northeast

Corridor that Amtrak utilizes. The USDOE agreed to engage Sandia in performing a conceptual design study of an advanced microgrid system to support NJ TRANSIT's operations. In performing this work, Sandia would employ its Energy Surety Design Methodology ("ESDM"), which is a quantitative risk based assessment approach developed to help communities evaluate regional critical and priority energy needs and identify advanced solutions to attain energy system performance goals. The conceptual design of NJ TRANSITGRID would represent the first transportation system application of ESDM in the nation.

Over the course of six months, NJ TRANSIT worked with Sandia, the New Jersey Governor's Office of Recovery and Rebuilding, USDOE, NJBPU, and other State agencies to advance the conceptual design. To inform the effort, in collaboration with Rutgers University, NJ TRANSIT modeled transportation capacity to identify target locations that would need to be energized in order to maximize available service. NJ TRANSIT worked with Sandia to define system boundaries, identify the Design Basis Threat (DBT) to the system, determine performance objectives, and to review energy usage needs and data over an extended period of time. NJ TRANSIT worked with two regional partners to explore potential for partnership on the project: Amtrak and the Port Authority of New York and New Jersey's Trans-Hudson System (PATH). NJ TRANSIT also sought input from Public Service Electric & Gas (PSE&G), the Environmental Defense Fund (EDF), and other regional stakeholders.

This effort culminated in Sandia's issuance of a feasibility study report in February 2014 (A. Ellis et al., *Sandia Report: NJ TRANSITGRID Feasibility Study* (Feb. 2014, SAND2014-1100)).

The Sandia Report and other information were submitted for consideration to the U.S. Department of Transportation's Federal Transit Administration ("FTA") in March 2014 as part of a thirteen state resiliency competition. In September 2014, the FTA announced that NJ TRANSIT would receive a $410 million grant to develop the project. NJ TRANSIT is coordinating the project with other FTA-funded activities as part of NJ

TRANSIT's Superstorm Sandy Recovery and Resilience Program.

Project Technical Overview

As detailed in the Sandia Report[1], NJ TRANSITGRID would protect the "inner core" rail system from regional power blackouts, by supplying independently generated electric power directly to the constituent systems, through engineered control technology that can deliver reliable and consistent power as required for the NJ TRANSIT Morris & Essex lines, a portion of Amtrak's Northeast Corridor Line, NJ TRANSIT's Hudson-Bergen Light Rail system, and several NJ TRANSIT bus, station, maintenance and ferry facilities. By retaining critical inner-core rail, light rail and bus service, the region will retain a level of functionality even in the event of a major power disruption.

As currently contemplated, NJ TRANSITGRID will be designed, constructed and operated as an electric generation and distribution resource, with the capacity to import from, and export into, the larger PJM commercial grid 24 hours per day, 7 days per week (24/7). When the PJM commercial grid is compromised, this resource will be able to supply electricity directly (islanded mode) to a portion of the NJ TRANSIT public transit system and the Northeast Corridor.

The feasibility study contemplates that the critical loads of these key segments would be supplied power through a 104 megawatt ("MW") central generation power plant located, to the extent practicable, in the vicinity of NJ TRANSIT's Meadows Maintenance Complex in Kearny, New Jersey, proximate to a natural gas distribution line and with access to NJ TRANSIT's Mason Substation and other electrical infrastructure. The Sandia Report identifies a particular site under consideration but also notes that other sites may be considered as part of an ongoing analysis. The central power plant would

[1] The Sandia Report explores multiple NJ TRANSITGRID configuration scenarios, including a potential scenario where power is supplied to support PATH critical system operations. The scenario being pursued at this time does not include powering the PATH system.

supply power to support train operations, including traction, signal systems, ventilation, pumps, compressors, track switches, snow melters, and communications. House power (stations and other facilities) may also be supported by the central power plant.

Project Transportation Objective

The fundamental purpose of the NJ TransitGrid is to provide a sustainable level of transit service as contemplated by the "Incident Transportation Plan" immediately following a major event that negatively impacts the supply of electric power to transit facilities.

The overall service goal is to transport as many people as possible to greater Newark, the New Jersey Hudson River waterfront in Hudson County, or the Manhattan Central Business District (south of 59th Street) utilizing an array of bus, commuter rail, light rail, rail rapid transit and ferry services. While some services will operate in a limited manner because of available electrical power, and some will operate fully, all will benefit from the implementation of the NJ TransitGrid.

Within New Jersey, a limited portion of the NJ TRANSIT commuter rail system in northern New Jersey will have electrical power provided to it from the NJ TransitGrid to sustain a core system operation. NJ TRANSIT's intrastate bus services will be operating and interstate bus services will be redirected to locations where travelers can transfer to available trans-Hudson services. NJ TRANSIT will be operating the Hudson Bergen Light Rail Line to provide transit service to the New Jersey Hudson River waterfront in Hudson County, New Jersey. There are four primary locations where trans-Hudson travelers will be able to board public transit into Manhattan: Hoboken Terminal, Secaucus Junction, Weehawken Ferry Terminal and Newark Penn Station. There are also a few smaller locations where travelers will be able to access lower-capacity private ferry services. While the focus is on AM peak period demand, it is assumed a PM peak period service will also be provided, where historically demand is more spread out.

Technical Services Contemplated in this RFP

The Technical Services contemplated in this RFP will inform NJ TRANSIT's project development strategy through the review, validation and/or modification of prior studies and assumptions, ultimately resulting in the development of a bid package for procuring final design and construction, including potentially through a design, build, operate and maintain procurement or other procurement vehicle as warranted by the project.

This contract will be divided into two separate Phases with two separate Notices to Proceed (NTP's):

Phase I – Includes preparation of a Design Criteria document and generation of Preliminary Engineering documents, generally based upon previously developed Concept Design as described in the Sandia Report and information contained in the NJ TransitGrid Grant Application dated March 25, 2014. In addition, Phase I includes support to the NJ TRANSIT team (includes BEM Corporation) responsible for preparing an Environmental Impact Statement (EIS) and meeting permitting requirements. Environmental/regulatory compliance technical engineering support and documents for this project will be supplied by the Consultant during all contract phases as necessary and as directed by NJ TRANSIT to support Permit Applications and Regulatory Approvals prepared by others.

Phase I activities include the development and implementation of bid assistance support, contract packaging, and procurement support during the bid process.

Phase I activities include identification of Project task risks and a recommended mitigation program along with other NJ TRANSIT Superstorm Sandy programmatic requirements.

Phase II –Engineering Assistance During Construction

At NJ TRANSIT's direction, the Consultant shall provide the necessary qualified personnel to provide engineering support during project construction. Such forces will be mobilized upon successful award of a separate contract for the Final Design, Construction and Operations of the Project. Consultant staff will form an adjunct to NJ TRANSIT forces providing design change assessments, value engineering support, change order review support and cost estimating support deemed appropriate by NJ TRANSIT.

The initial NTP will be for Phase I services only. Phase II will be at the sole discretion of NJ TRANSIT. The Consultant's technical proposal shall provide a detailed scope of services for the completion of Phase I and a general scope of services for Phase II. The Consultant's cost proposal shall provide a cost proposal for the provision of services for the completion of Phase I. A separate cost proposal for Phase II will be submitted at the request of NJ TRANSIT.

Required "Team" Organizational Structure

- The Consultant shall provide an organizational structure of a Project Team, which will address each Task, identified herein; control the budget, schedule and product quality; and advance the Project to a successful completion.
- The Consultant shall organize and staff a project office in New Jersey accessible to NJ TRANSIT Project staff and reasonable proximity to the Project Area, with adequate staffing, hardware and support to successfully manage and complete the requirements for the Project.
- The Consultant shall receive written approval from NJ TRANSIT prior to any change in the Consultant's organization, key personnel, and/or manpower structure subsequent to Contract Award.
- The Consultant shall perform services for, attend and assist at required meetings and coordinate work, with NJ TRANSIT and other Project participants and

relevant state, federal, regional regulatory authorities and local governmental entities as directed by NJ TRANSIT. The Consultant shall be responsible for identifying any other stakeholders including potential agencies, community groups, associations or organizations that must be coordinated with in connection with the Project. All communication with all outside agencies shall be accomplished solely through NJ TRANSIT. The Consultant shall NOT contact outside agencies or stakeholders directly. Draft Meeting minutes shall be prepared and distributed to participants within seven (7) calendar days of the close of said meetings. Final Meeting Minutes will be approved by NJ TRANSIT and subsequently distributed to participants upon NJ TRANSIT request.

This work shall be directed by a designated Consultant Project Manager, who is employed full-time on the Project and who will coordinate all efforts and serve as liaison between all parties implementing this Project. This Consultant Project Manager shall be a licensed Professional Engineer with 10 years of applicable experience and will be supported by principals of the firm and other specialists as required.

Project Manager Responsibilities

- The Consultant Project Manager shall represent the entire Consultant team and be responsible for all communications with NJ TRANSIT. It shall be the responsibility of this individual to coordinate the activities of the multi-disciplined effort to provide NJ TRANSIT with a completed Project within the established schedule and cost.
- The Consultant Project Manager shall conduct review meetings, progress meetings and attend workshops or meetings with other consultants performing work for NJ TRANSIT, bi-weekly, monthly, or as often as required by NJ TRANSIT and shall ensure minutes of the same are taken and provided to NJ TRANSIT.

Required Project Manager Capabilities

The Consultant Project Manager (PM) shall have demonstrated experience of ten (10) years or more in the design, construction and commissioning of natural gas fired power generation plants in the range of a minimum of 100mw in size with associated transmission and distribution elements as well as an aggregate project value of at least $300 Million. This experience shall also include experience and working knowledge of advanced, smart-grid technologies as a way to improve the reliability, security, and resiliency of the electric grid during a disruptive event.

Additionally, the Project Manager shall have the requisite experience to assist NJ TRANSIT in its regulatory compliance in order to achieve operation and power transmission inter-connection to the regional power grid.

Required Deputy Project Manager Capabilities

The Consultant Deputy Project Manager (DPM) shall have demonstrated experience of ten (10) years or more experience working with commuter rail or inter-city rail environments. Specifically, the DPM shall have experience working with passenger rail design and engineering as related to the civil, structural, geotechnical engineering, design and construction of electrical power transmission/interconnection compatible with existing commuter rail infrastructure in the Project Area. The DPM shall demonstrate requisite prior experience that shall ensure the successful integration of all railroad infrastructure with NJ TRANSITGRID electric power as outlined in this RFP.

Required Consultant Team Capabilities

Proposers should be thoroughly familiar with the most recent Federal and State guidance on the conduct and preparation of design and engineering efforts as well as associated environmental and/or regulatory compliance requirements for design, construction and operation of natural gas fired power generation plants in the range of a minimum of 100mw in size, power distribution and transmission as well as rail projects as prescribed by Federal Energy Regulatory Commission (“FERC”), North American Electric Reliability Corporation (“NERC”), New Jersey Board of Public Utilities

("NJBPU"), Northeast Power Coordinating Council ("NPCC"), PJM regulations and practices, as well as other Regional Entity Reliability Standards, the Federal Railroad Administration (FRA) policies and regulations and other applicable agencies or jurisdictions including the Federal Transit Administration (FTA).

The Consultant Team must possess a working knowledge and expertise in the areas of Regulatory Compliance as applicable to the registration, certification and operation of power generating facilities as well as the transmission and distribution of electric power. The ensuing discussion will not be considered exhaustive but provides an initial background characterization of required work elements to be provided by the successful Consultant Team, to the extent applicable to the Project. The RFP's reference to any specific statute, regulation, order, reporting form, or requirement does not indicate that NJ TRANSIT has determined that statute, regulation, order, reporting form, or requirement is applicable to the Project.

In addition to the foregoing technical expertise, firms must demonstrate a capability to design and assist NJ TRANSIT in implementing power plant construction including natural gas supply, plant commissioning and operation along with its power transmission inter-connection to the regional power grid.

The consultant teams responding to this RFP shall be able to demonstrate relevant experience in providing design and construction assistance of natural gas fired power plants, associated power transmission and distribution facilities, experience working with commuter rail or inter-city rail environments, as well design experience related to fresh water wetlands, riverine environments and regulated floodplains, as well as brownfield settings.

The consultant team shall have multidisciplinary staff resources with experience and expertise in such aspects as:

- Management and successful completion of engineering of natural gas fired electrical power generation plants, power distribution and transmission, electric

power control architecture including industry standard software (including cyber-security) and hardware design, as well as;

- Experience and working knowledge of advanced, smart-grid technologies as a way to improve the reliability, security, and resiliency of the electric grid during a disruptive event. Advanced or smart design approaches use modem communication and energy-management and energy-control technologies to enable distribution system feeders to operate both "grid-tied" and "islanded" modes using natural gas fired energy generation components. Such design will support demand response opportunities for large electricity users and utilities when grid-tied and enhance local-area energy reliability and resiliency when islanded;
- Determination of environmental and compliance impacts as well as mitigation techniques with respect to noise and vibration, air quality, aesthetics, energy, archeology/historic preservation, wetlands, development in the floodplains (hydraulic, net fill, riparian mitigation and storm-water management), parks and recreation areas, water resources, wildlife and vegetation and the development of associated mitigation measures along with an ability to fully support NJ TRANSIT Project Federal and State permit and agency approval efforts including the Project Federal Environmental Impact Statement process undertaken by NJ TRANSIT under a separate Contract;
- Facility/Plant Operations and maintenance cost estimation;
- Engineering and capital cost estimation for the power plant, associated transmission and interconnection infrastructure and related transit facilities, structures and utilities, at preliminary levels of design;
- Civil, structural, geotechnical engineering, studies for design of a natural gas fired electric power generation plant, electrical power transmission/interconnection compatible with existing commuter rail infrastructure in the Project Area as well as the commercial power grid supplying the electric power to the Project Area;
- Utility relocation/construction;
- Hazardous waste as well as Regulated soil and ground and surface water testing,

analysis, cleanup and/or remediation planning and cost estimation

- Stakeholder participation and agency coordination for major projects under and through NJ TRANSIT direction;
- NJDEP/USACOE rules and regulations pertaining to Project construction impacts, Electric Traction demand analysis and forecasting;
- Surveying, mapping, right-of-way identification and title research;
- Report preparation and presentation graphics;
- Development and operation of an electronic project document control and data management system;
- Engineering/Design Signal, Communications, and Electric Traction infrastructure and functional control thereof supporting an integrated power generation plant with transmission and distribution capabilities for continued functional operation of mass transit as contemplated in the NJ TransitGrid Project.

III. SCOPE OF SERVICES – GENERAL

NJ TRANSIT reserves the right to cancel the project or reduce the scope of effort for the Consultant without cause at any time.

The Consultant shall complete the Design Criteria and Preliminary Engineering and bid ready documents for the Project fifteen (15) months following Notice to Proceed (NTP).

If during the course of this project, it is determined by NJ TRANSIT that an extension of time is required to meet new or modified project demands, NJ TRANSIT reserves the right to extend this agreement for a period agreeable to both parties.

The Consultant shall perform services for NJ TRANSIT, and attend and assist at all meetings required to inform and coordinate work with NJ TRANSIT staff and relevant agencies.

The Consultant shall provide a work plan with timelines and milestones for the management of these services to NJ TRANSIT's Project Director. In addition, the Consultant shall keep NJ TRANSIT's Project Director routinely informed of its progress during the needs analysis, network(s) design and implementation strategy, in written format, as required, during the course of the work.

The Consultant shall maintain and make available, as requested, all documents, records and other evidence pertaining to service and costs thereof for a period of five (5) years from the final payment under the contract.

When plans and specifications are required, the approval of drawings by NJ TRANSIT is not to be construed as authority to violate, cancel or set aside any provisions of applicable Municipal, County, State or Federal codes, laws, rules and regulations. Nothing contained in this RFP or any resultant contract is intended to relieve the Consultant of responsibility for maintaining adequate supervision/responsible charge over the design in order to endeavor to guard NJ TRANSIT against deficiencies in the design work.

Proposing firms are reminded that it will be necessary to monitor and/or coordinate with other relevant major projects and local developments during the conduct of this project. These include:

- Amtrak's projects including: The fifth Track in New Jersey Segments of the NEC, and the New Jersey Gateway Connections;
- Projects being coordinated as part of NJ TRANSIT Superstorm Sandy Recovery and Resilience Program ("SSRRP") and other NJ TRANSIT Capital Program activities to ensure that existing or contemplated projects do not preclude integration with NJ TransitGrid. The Consultant may be asked to review design drawings for SSRRP and other Capital Program projects, to the extent there is a possibility of overlap or need for coordination between projects.

The NJ TransitGrid Project is a pivotal element of the Corporate-wide NJ TRANSIT Superstorm Sandy Recovery and Resilience Program. Consequently, all Project communications, reports and submittals shall conform with programmatic standards and requirements as developed by NJ TRANSIT for the Superstorm Sandy Recovery and Resilience Program.

In no way is the material in the succeeding sections of this solicitation intended to prescribe the exact requirements of the Project. Rather, the Project shall require preparation of design/engineering documentation demonstrating compliance with Project goals, environmental and regulatory requirements as well as risk assessments in conformance with all relevant rules and regulations and industry norms and standards, for the production of such documents as required by the FTA, FRA, USDOE, Federal Energy Regulatory Commission ("FERC"), New Jersey Board of Public Utilities ("NJBPU"), NJDEP, USACOE, USCG, PJM Interconnection LLC ("PJM"), NJ TRANSIT, Amtrak and any other agencies with jurisdiction. Any deficiencies in the Consultant work products identified by any reviewing agencies – State or Federal – shall be the sole responsibility of the Consultant to cure, at its cost and without recourse to NJ TRANSIT. The material herein is intended merely to establish minimum standards for content and form of material and data required to be gathered, analyzed, and presented to comply with provisions of a Federally compliant Project Environmental Impact Statement as well as any applicable Federal and State regulations as they apply to the construction and operation of major power generation and transmission projects as well as rail transportation projects.

IV. SCOPE OF SERVICES - DETAILED DESCRIPTION OF TASKS

PHASE I – Project Management and Engineering

The Project Management and Engineering Phase of the Project includes design elements for the Central Power Plant, Distribution and Transmission Facilities/Infrastructure for the electric power generated, associated control and management with inter-connection to the Regional Commercial Power Grid and all

structural and infrastructure components and control elements necessary to maintain a defined level of rail operations for NJ TRANSIT and Amtrak between New York Penn Station and NJ TRANSIT County Yard along the NEC and between NJ TRANSIT County Yard and Hoboken Terminal. Also included is the connection of several Hudson Bergen Light Rail electric substations to the Central Power Plant. The multi-component task descriptions below reflect the diverse nature of the multi-discipline Project design effort. Not included in this RFP is the distributed generation, solar power generation, or electric vehicles components of the Project.

Related Field Activities

- The Consultant may be required to secure the right to enter upon, cross over, under or above the property of owners owning land adjacent to the proposed Project as directed by NJ TRANSIT. The Consultant shall therefore obtain written approval to enter upon this property from said owners prior to any entry onto the property by the Consultant following permission by and coordination with NJ TRANSIT. Furthermore, the Consultant shall upon direction by NJ TRANSIT, secure approval to enter Amtrak and/or Norfolk Southern property.
- The Federal Roadway Worker Safety Act requires “Roadway Worker Protection (RWP)” training for anyone working on or near an active railroad. Satisfaction of this requirement is the responsibility of the Consultant. A certification to this effect must be presented to NJ TRANSIT prior to any Consultant or Sub-consultant’s employee entering onto or near the ROW. If the Consultant does not have the required training, NJ TRANSIT can and shall provide it relative to entry upon NJ TRANSIT right-of-way. All contractors entering upon Amtrak property are required to attend Amtrak contractor safety training annually.
- All requirements of 49 CFR 214 shall be followed as applicable.
- When working within the Project site, the Consultant shall be governed by the following Site Work Procedures;

    i. The Consultant shall limit work to the areas necessary for the performance

of such inspections and shall not interfere with the operation of adjacent commercial activities, the railroad and associated infrastructure without first obtaining specific approval from NJ TRANSIT. Any activity that requires access to the rail road right of way must be conducted with personnel that have the relevant and current rail safety training as a minimum, but not limited to, Roadway Worker Protection (RWP) training.

ii. During all periods of time when not performing operations at the field work site, the Consultant shall store all equipment being used for the inspection in pre-approved areas and shall provide all security required for such equipment. The Consultant shall not permit any objects or pieces of equipment to lie unattended on sidewalks, roadways, passageways, corridors, stairways, platforms or structures at any time.

iii. Survey work within the existing Right-of-Way (ROW) of the railroad or NJ TRANSIT property shall be performed at the site only between the hours of 9:30 AM and 3:30 PM, Monday through Friday, unless otherwise directed by the NJ TRANSIT Project Director or designee. Subsequent references to the "Project Manager approval" in this RFP are meant to identify the appropriate NJ TRANSIT Project Director or his designee.

iv. The Consultant shall coordinate all site work necessary to conduct the inspection and survey work, (as detailed in Phase I) required with the Project Director. Such work shall only advance following approval by the NJ TRANSIT Project Director.

v. The Consultant shall provide the NJ TRANSIT Project Director with a minimum of two (2) working days of notice prior to the intent to conduct site inspections on NJ TRANSIT property and fourteen (14) working days' notice for access to Amtrak or privately owned property. At that time, the Consultant shall provide details relevant to the character and nature of the inspections planned and prepare a Site Specific Work Plan (SSWP) if required. Work will only commence following the approval of the SSWP by the subject Railroad.

- Work within the fouling limits of the railroad (defined as within 18 feet of the

centerline of track on NJ TRANSIT's ROW and within 25 feet of the centerline on Amtrak's ROW), will require appropriate flag protection. The Consultant is not to work within the fouling limits of the railroad without flag protection. Track fouling will be coordinated through NJ TRANSIT but fouling time cannot be guaranteed by either Railroad.

The deliverables of each task shall be provided in the form of camera-ready originals as applicable and electronically in their native format and in Adobe pdf format. All reports, drawings and text material will be provided in hard copy, electronic transmission and on CD Rom as directed by the NJ TRANSIT Project Director.

TASK 1 - PROJECT MANAGEMENT AND ADMINISTRATION

The objective of this task is to keep NJ TRANSIT informed in a timely fashion with regard to both technical progress and financial status of the project. Project management shall be of a proactive form that anticipates problems and delays as best as possible and addresses them before they reach crisis level. Another objective is to maintain a continuous and timely dialogue and flow of information between the consultant and NJ TRANSIT. Coordination and assistance with Amtrak, utilities and other related jurisdictional agency reviews is required subject to NJ TRANSIT direction.

The Consultant shall provide an experienced, integrated team with the specific combination of technical and management expertise across all required disciplines necessary to meet all Contract requirements.

The Consultant shall keep NJ TRANSIT informed in a timely fashion with regard to both technical progress and financial status of the project. To these ends, the project management team will implement and maintain a three-step approach to project management and control:

Subtask 1.1 Project Management Plan

A project management plan shall be prepared and implemented by the consultant and NJ TRANSIT at the outset of the project. The plan shall clearly define the roles and responsibilities of all parties involved. Formal lines of communication shall be outlined, budgets shall be established, schedules agreed upon, quality control procedures identified and invoicing procedures established.

The Consultant shall prepare a comprehensive Project Management Plan (PMP) for the NJ TransitGrid Project, fully addressing the means, methodologies, procedures and resources to be applied by both NJ TRANSIT and the Consultant in achieving the Project Management objectives stated above. The PMP shall work in conjunction with the Quality Management Plan as described later in this RFP.

The PMP shall be prepared in general accordance with the established guidelines of the FTA/FRA, and shall be of sufficient detail to monitor the Project's planning, engineering, and third party coordination throughout the duration of the Contract. NJ TRANSIT has developed document formats and requirements for Programmatic submittals in conformance with reporting to be utilized in NJ TRANSIT's Superstorm Sandy Recovery and Resilience Program. In order to maintain consistency, such requirements related to the PMP submission shall be available to the Contractor subsequent to Contract award. The Consultant shall submit a draft of the PMP within four weeks of NTP, and the final PMP within eight weeks of NTP after receiving comments from NJ TRANSIT including comments from the FTA representative. Updates to the PMP, shall be made periodically or as directed by NJ TRANSIT.

The PMP shall include appropriate charts and narrative to describe the organization, relationships, responsibilities, and procedures to be implemented to manage all aspects of the Project. At a minimum, the PMP shall address the following:

- Roles and Responsibilities
- Project Controls Management – schedule and budget
- Communications Protocol
- Design Management – internal reviews and checking procedures
- Configuration Management
- Interface and Integration Management
- Third Party Coordination / Third Party Agreements management
- Records Management

Subtask 1.2 Project Control

The Consultant, after discussion with NJ TRANSIT, shall establish a formal Critical Path Method (CPM) project schedule (min. Primavera 6) for the accomplishment of all tasks in this RFP. CPM updates shall be provided to NJ TRANSIT on a monthly basis or upon request. In addition, the Consultant shall establish a system of monthly progress and

cost control reports attached to monthly invoices (see Appendix 4 for Sample Invoice Report). All subconsultants employed shall be required to render invoices for the same general time periods that are utilized by the prime consultant. **FAILURE TO SUBMIT THE INVOICES IN THE PRESCRIBED MANNER SHALL RESULT IN SUCH INVOICES HELD UNTIL THE FOLLOWING INVOICE PERIOD**. Exceptions identified following NJ TRANSIT invoice review must be resolved to NJ TRANSIT's satisfaction within two working days. Absent such resolution, disputed invoice amounts shall be deducted from that invoice. The report form as well as invoice(s) shall include a written description of current technical, budget and schedule status as well as a comparison of this information to the preceding month, project-to-date and projected future work efforts as applicable. Milestones, decisions made, issues and action items shall be highlighted. Any unanticipated delays or gains or cost adjustments driven by unforeseen circumstances should be discussed in terms of completing the overall project on time and within budget. The Consultant shall provide a summary of all invoice costs in a format depicting values as described in Appendix 4.

Subtask 1.2.1 Final Scoping/Preliminary Engineering (PE) Schedule

Timely and successful completion of PE is pivotal to the advancement of subsequent contracts and phases as well as regulatory compliance documentation including but not limited to the Project Federal EIS, Federal and State Permits, etc.. The Consultant shall develop and maintain a detailed project schedule, representing a practical plan to complete the Contract scope of work, and to meet the overall schedule objective of achieving Bid Ready status by NTP + 15 months. Additionally the consultant shall prepare a projected construction schedule(s) for the work required to complete the NJ TRANSITGRID Project and have it fully operational.

NJ TRANSIT has developed document formats and requirements for Programmatic submittals in conformance with reporting to be utilized in NJTRANSIT's Superstorm Sandy Recovery and Resilience Program. In order to maintain consistency, such requirements related to the Project Schedule submission shall be available to the Contractor subsequent to Contract award.

The purpose of the schedule is to provide an effective management tool by which the Consultant and NJ TRANSIT can measure progress of the work, identify areas of schedule risk, and mitigate against any potential delays on a timely basis. The actual number of activities in the schedule shall, in the judgment of NJ TRANSIT, be sufficient to assure adequate planning of the Project and to permit monitoring and evaluation of progress and the analysis of time impacts.

The Phase I Schedule shall be detailed and correlate with the work plan described in the PMP and organized based on the tasks and major elements of the Project. The Phase I schedule shall identify all activities and milestones associated with the PE Contract's scope of work.

The Consultant shall use Project Primavera 6.0, or NJ TRANSIT approved equal. The format of the schedule shall include bar chart plots and shall show columns for:

- Activity ID
- Activity Description
- Original Duration
- Early Start, Late Start, Early Finish and Late Finish
- Total Floats.

Timescale shall be shown in calendar days.

Initial Scheduling Meetings and Schedule Update Meetings shall be held to review, agree and approve all schedule deliverables.

The WBS codes shall be presented in organizational-chart format for approval prior to developing the Contract Schedule. Consultant shall code the Baseline Schedule using no more than eight (8) alpha-numeric characters for the Activity ID, and shall utilize the approved WBS.

The Consultant shall submit the draft Baseline Schedule *without status* within three (3) weeks of NTP. The Baseline Schedule shall be accompanied by a narrative outlining the assumptions made, formatting approach, definitions of terminology to be used in monthly reporting, estimates of original durations, calendar types used, explanation of resources and the production rates, relevant drawings or charts.

The Consultant shall make all corrections to the draft Baseline Schedule requested by NJ TRANSIT and resubmit within two (2) weeks of receiving comments. If the Consultant does not agree with NJ TRANSIT's comments, the Consultant shall provide written notice of disagreement within five (5) days from the receipt of the comments. The items in disagreement shall be resolved in a meeting held for that purpose, if necessary.

The Baseline Schedule shall show the sequence and interdependence of activities required for complete performance of the Project beginning with the date of the NTP, and concluding with the date of acceptance of the Project and shall list specifically:

- Interim milestone completion dates required by the Contract shall be characterized. Phasing of all design activities as specified shall be prominently identified. Particular attention shall be given to design submittals.
- Submittal and review of design submittals and other deliverables shall include review time for designated reviewers.
- Submittals to, and reviews by outside agencies and shall allow sufficient time for review.
- Interface coordination and dependencies with proceeding, concurrent, and follow on contracts will be developed.
- NJ TRANSIT designated milestones will be developed.
- NJ TRANSIT, Amtrak, Third Party Commercial and Regulatory milestones, as required to achieve approval into Final Design will be developed .

- Acceptance of the Project, including completion of unfinished items prior to completion of any Contract milestones will be noted.
- Work to be performed by other Consultants and agencies that affect the schedule and shall allow reasonable time for completion will be noted.
- Acquisition of permits, Final EIS acceptance and related environmental approval, licenses, agreements, and coordination with, municipalities, other agencies and community groups will be noted.

The Consultant shall accurately develop the schedule logic and activity interdependencies, such that the schedule can fully convey an understanding of the Critical Path.

The Progress Schedule shall include all information current as of the status date. The Progress Schedule submittal to NJ TRANSIT shall be accompanied by a Schedule Status Report. This narrative report shall describe activities completed and progressed during the report period, activities planned for the forthcoming report period, potential issues, delay chain analysis as required, and actions required to correct any negative float (actual or predicted). The report shall include an explanation of potential delays and problems, their estimated impact on performance, and their estimated impact on the Contract completion date. In addition, alternatives for possible schedule recovery, complete with a narrative rationale, to mitigate any potential delay shall be included for consideration by NJ TRANSIT.

Every Progress Schedule shall be submitted for approval at least five (5) days prior to the NJ TRANSIT designated Progress Schedule Meeting. The Progress Meeting shall include discussion confirming percentage complete, actual start/finish, earned values and remaining duration. Upon approval of the Progress Schedule, it shall be included in the Monthly Report. The status date of the Progress Schedule will be the last day of each month.

Timely progress reporting and review by the Consultant’s management team will be

critical in avoiding schedule creep or delays which will be detrimental to the schedule given the objectives of the project. Progress Reports shall include;

- Consultant's Transmittal Letter;
- Description of Problem Areas;
- Current and Anticipated Delays; and the following information;
- Cause of the delay;
- Corrective action and schedule adjustments to correct the delay; and
- Impact of the delay on other activities, milestones, and completion dates.
- Pending Items and Status Thereof, regarding the following requirements:
  - Permits;
  - Commercial agreements with Third Parties, i.e. natural gas pipeline supply connections, interconnections with PJM, etc.
  - Change Order;
  - Time extensions; and
  - Interim Milestone Dates and Contract Completion Dates Status
- Discussion of critical path for month and any changes to critical path since the last report;
- Progress during period and plans for Project in forthcoming period.

Planned schedule percentage complete versus actual percentage achieved and earned value versus planned usage for each resource for shall be computed in tabular format from the resource and price loading developed for this RFP and Contract execution.
An overall cumulative progress curve shall be plotted with the horizontal axis in calendar months.

A schedule found to be unsatisfactory, or otherwise not in compliance with Contract documents shall be revised by the Consultant and resubmitted. Re-submittals shall conform to the same requirements as original submittals.

Use of float suppression techniques such as preferential sequencing, special lead/lag

logic restraints, negative lags, long lags, extended activity times, or imposed or constrained dates, shall be cause for rejection of the Detailed CPM Schedule and any revisions or updates.

The Consultant shall schedule submittals for review by NJ TRANSIT in a manner that distributes reviews across time to avoid concentration of reviews in any discipline.

Whenever it becomes apparent in the course of the current Progress Schedule Meeting or from the Progress Schedule itself that interim milestones, constraints, or submittal dates will not be met, the Consultant shall identify remedial actions through a Recovery Plan & Schedule, to be included as supplement/attachment to the Schedule Status Report. The Recovery Schedule shall be a separate discrete “break-out” schedule, which shall include activities as required to achieve the final milestones that will coincide with the approved Baseline Schedule. Prior to executing remedial actions, the Consultant shall immediately notify NJ TRANSIT, and obtain approval before proceeding with same.

If original Baseline Schedule dates cannot be maintained, then the Consultant shall obtain approval from NJ TRANSIT prior to incorporating any revised dates into the next Progress Schedule submittal.

The last updated schedule submitted shall be identified as the “Final Progress Schedule.” This schedule shall reflect the exact manner in which the Contract was actually completed (including start and completion dates, activities, actual duration’s, sequences, and logic), and shall be signed and certified by the Consultant’s Project Manager and the Consultant’s scheduler as being a true reflection of the way in which the Contract was actually completed.

Deliverables:

- Work Breakdown Structure Codes
- Baseline Schedule – draft and final

- Monthly Progress Schedule and Schedule Status Report
- Recovery Plan and Schedule, as required
- As-Built Schedule

In addition to routine reporting, the Consultant will create and maintain an intra-project, password protected web-site through which NJ TRANSIT and the Consultant can communicate and share data, drawings and reports rapidly and efficiently. This will help the Consultant operate proactively to both inform NJ TRANSIT of emerging issues and facilitate rapid resolution to maintain schedule and budget. This system will also be utilized as the project's file cabinet and for archiving all project documents and correspondence. The said system shall be compatible with the document control records management system outlined below. Upon completion of the project or at such time as directed by NJ TRANSIT, the Consultant shall provide all data contained therein to NJ TRANSIT using computer hardware storage approved by NJ TRANSIT for incorporation into the NJ TRANSIT computer network system.

Subtask 1.2.2 - Records Management Control System

The Consultant shall develop and maintain a system to identify and manage correspondence, business documents, current revision of instructions, procedures, drawings, specifications, reports and analyses, etc. The document database developed on this project shall be kept current throughout the term of the Contract, and provided to NJ TRANSIT in a condition suitable for use by others without need for additional licenses for another five (5) years from Project Completion and be in compliance with the Consultant's Configuration Management Plan. NJ TRANSIT's objective is to establish a "paperless" project to the extent as practicable.

The system at a minimum shall provide the following definition and components:

a) A system designed around the Consultant's evaluation and analysis of NJ TRANSIT's work flow and business practices;

b) An electronic interface (“desktop”) that requires nominal user training and provides quick response time for document creation, storage, and retrieval;
c) A highly secure system that can assign different access clearances for staff and project stakeholders;
d) A system that is fully compatible with and utilizes the same assumptions as the NJ TRANSIT ECMS document control system.

The system must manage manual and electronic documents including:

- General correspondence
- Contracts, specifications, progress reports, invoices
- Budget and finance data
- Drawings, plans, and images
- Email messages and attachments
- CDs, DVDs, and other hard media
- Native files and image files of all documents

The system must provide the following features:

- Central clearinghouse for all project documents
- Categorization of inbound traffic
- Marking of each document with (at a minimum):
  - Originating date
  - Received date
  - From organization
  - To organization
  - Subject
  - Unique sequence number
- Scanning and indexing
- Posting of scanned documents for retrieval
- Email notification to document recipients

- Maintenance of the document database
- On-site printing capability for all document sizes and formats
- Filing of original hardcopy
- Transmitting of original hardcopy to offsite records warehouse (If needed for compliance with NJDARM requirements)

The system shall also provide a fully-integrated Electronic Content Management (ECM) system, including the following components:

- Digital Mailroom (DM) - or future project field office
- Scan, index and distribute
- Electronic Document Management System (EDMS) - web-based
- Electronic Document posting & notification
- Document collaboration capabilities
- Email management including forced classifications
- Check-in and check-out protocols
- Revision control
- Audit trail
- Security (document by user/group)
- Watermarking for printed copies
- Administrator reports
- Workflow
- Records Management (RM)
- Retention schedules
- Notification of destruction

NJ TRANSIT is using an in-house Enterprise Content Management System (ECMS), using Open Text Live Link as the platform. Upon request by NJ TRANSIT, the Consultant shall provide personnel at a designated NJ TRANSIT Office to assist NJ TRANSIT in data entry as well as down loading and up loading of documents into

the NJ TRANSIT ECMS. The schedule for data uploads to the NJ TRANSIT ECMS shall be determined subsequent to Contract award. However, such uploads shall occur at a minimum on a monthly basis. It is anticipated that the Consultant shall employ an ftp site or similar portal to transfer documents between NJ TRANSIT's ECMS and the Consultant's document system. The personnel should be cognizant of DARM regulations concerning document scanning and management procedures.

Deliverable:

Records Document Management System and identification of appropriate support staff subject to NJ TRANSIT approval.

Subtask 1.2.3 - Monthly Progress Reporting

The Consultant shall carefully monitor the progress of the Project during design and provide NJ TRANSIT with Monthly Progress Reports. The approved schedules shall be used by the Consultant to ensure adequate planning, scheduling, management, and execution of the Project and to enable NJ TRANSIT to evaluate Project progress and requests for payments by the Consultant.

NJ TRANSIT has developed document formats and requirements for Programmatic submittals in conformance with reporting to be utilized in NJ TRANSIT's Superstorm Sandy Recovery and Resilience Program. In order to maintain consistency, such requirements related to the Project Monthly Progress Report submission shall be available to the Contractor subsequent to Contract award. Upon direction by NJ TRANSIT, the Consultant shall assist and provide support to NJ TRANSIT staff in the preparation and submittal of Project reports to the FTA.

The Consultant shall submit one (1) hard copy and one (1) electronic copy of the Monthly Progress Report to NJ TRANSIT by the seventh (7^{th}) day of each month that shall cover a reporting period for the preceding month. The Monthly Progress Report

shall be submitted by the Consultant's principal and shall include as a minimum the following:

- A written review of progress of the progress achieved for that month with specific reference to the activities detailed on the Baseline Schedule and detailed progress on each stage of the design during the reporting period.
- Details of any delays shall be specifically highlighted together with details of the Consultant's actions/proposals for corrective action and schedule recovery.
- Areas of concern and proposed resolution.
- Per task, planned schedule percentage complete versus actual percentage achieved and earned value versus planned usage for each resource shall be computed in tabular format from the resource and price loading. An overall cumulative progress curve shall be plotted with the horizontal axis in calendar months.
- Comparative progress curves and histograms showing actual versus planned performance in respect to major activities as may be required by NJ TRANSIT.
- A monthly update of the overall progress curve (or S curve) versus baseline progress curve.
- Updates of the Consultant's labor curve/table showing actual and planned labor, including subconsultant labor.
- Status of DBE participation.
- An up-to-date copy of the Delivery Submittal Schedule to NJ TRANSIT.
- Other content as directed by NJ TRANSIT.

A certificate signed by the Quality Manager certifying for the previous month that:

- All work, including that of subconsultants at all tiers, has been checked and/or inspected by the Consultant's quality staff and that all work, except as specifically noted in the certification, conforms to the requirements of the Contract.
- The Quality Management Plan ("QMP") and all measures and procedures provided therein are functioning properly and are being followed, except as specifically noted in the certification.

Deliverables:

Monthly Progress Report
Monthly Quality Certificate

Subtask 1.3 - Quality Control

A Quality Management Plan shall cover not only the consultant but also all subconsultants; the procedures shall be uniformly applied to all phases of the project.

Subtask 1.3.1 - Quality Management Plan (QMP)

The Consultant shall develop a comprehensive Quality Management Plan (QMP) for Phase I of the Project. The Consultant shall be responsible for conducting an ongoing quality program during the entire period of performance of the Contract based upon the QMP approved by NJ TRANSIT. An effective quality program is fundamental to all work performed by the Consultant.

The Quality Management Plan shall require the completion, checking, and correcting of work products before releasing them, to ensure accuracy, completeness, and ability to be understood by target audience.

The purpose of the quality program is to effectively and economically assure technical quality in the design of the Project, thus reducing the potential for:

- Adverse schedule and cost impacts.
- A poor quality design.
- Poor quality products.
- Interface and integration problems among various design elements of the and overall interface with elements of the NJ TRANSIT SANDY Resiliency Program and Amtrak NEC/Gateway Program.

- Personal and public safety problems

The QMP shall document how the Consultant shall execute the project to assure that:

- The Consultant's design process translates NJ TRANSIT's needs and requirements into an acceptable design.
- The Project is properly completed and furnished to NJ TRANSIT on time.

During the term of the Contract, the Consultant shall exercise positive control over the entire Project including the work of its subcontractors and subconsultants as described in the approved QMP.

Subtask 1.3.2 - Quality Management Plan Requirements

The QMP shall be prepared in general accordance with the established guidelines of the FTA, which essentially follow article 4.0 of the ISO 9001:2000 and ISO 10013 guides, and are further discussed below. The QMP shall be an executable system of processes defined and established for the Project. At a minimum, the QMP shall include a Quality Policy and Procedures, and reference other plans as may be specified herein and elsewhere in the Contract.

NJ TRANSIT has developed document formats and requirements for Programmatic submittals in conformance with reporting to be utilized in NJ TRANSIT's Superstorm Sandy Recovery and Resilience Program. In order to maintain consistency, such requirements related to the Project Quality Management Plan submission shall be available to the Contractor subsequent to Contract award.

The QMP shall be approved by the Principal-In-Charge in the Consultant's organization having primary responsibility for the Contract. The Consultant shall submit a draft within

four (4) weeks of NTP, and a final within eight weeks of NTP, incorporating comments from NJ TRANSIT and other stakeholders as applicable. The QMP shall be revised, updated, and approved as necessary throughout the term of the Contract to reflect the management system being currently used as the means for executing the Contract.

Implementation of the QMP shall be subject to NJ TRANSIT audit throughout the term of the Contract.

Subtask 1.3.3 - ISO 9001 Requirements

Certification of the Consultant under ISO 9001:2000 is not required for this Contract; however, the quality principles established by ISO 9001:2000, as set forth herein, form the basis for the quality system and Quality Management Plan required to be established by the Consultant.

The quality standards applicable to the Project under the Contract include the following:

- ISO 9001:2000: Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation and Servicing.
- ISO 10013:2000: Guidelines for Developing Quality Manuals
- ISO 8402: 2000: Quality Management and Quality Assurance – Vocabulary

Subtask 1.3.4 - Quality Manager and Other Resources

The Consultant shall appoint an experienced, qualified Quality Manager trained in accordance with established quality management standards, requirements and regulations. The selection of this individual is subject to NJ TRANSIT approval. The Quality Manager shall perform as the Consultant management representative and shall:

- Be responsible for implementing the QMP and shall have the authority to stop the Project. There shall be a clearly articulated Quality Policy approved by the Executive(s) of the Consultant and it shall be widely publicized and known throughout the project team.
- Report directly to the Consultant's Project Support Manager or more senior employee.
- Have direct access to a senior executive at the Consultant's firm.
- Be responsible for ensuring that the Quality Management effort is effective in ensuring that all Contract requirements are satisfied.
- Have direct access to and by NJ TRANSIT's Quality Director.

An Internal Quality Management Review shall occur at least bimonthly. A report regarding the results of the review shall be forwarded to NJ TRANSIT. Organizational and technical interfaces shall be defined in a manner that assures inter-discipline coordination and communication among and between designers and major subcontractors and subconsultants and NJ TRANSIT.

Subtask 1.3.5 - Design Control

The Consultant shall develop a Design Control Plan (DCP), establishing design control procedures that shall be integrated and consistent with the requirements described throughout this RFP. The Plan shall visibly track and report the status of design products to be submitted by the Consultant for NJ TRANSIT review. The Consultant shall revise, update, and submit for approval the Plan as required. The Plan shall:

- Define procedures for completing internal verification prior to the submission of documents to NJ TRANSIT for its review. Design Verification Activities shall include checking and back-checking calculations, drawings, and other design elements without reliance on review and comments from NJ TRANSIT and shall be conducted before providing each design submittal to NJ TRANSIT.

- Define how design inputs and changes shall be managed by the Consultant in a manner that assures Contract and Consultant requirements are correctly translated into the drawings and specifications.
- Include a Design Review Schedule which shall be revised as needed as the design progresses.
- Be consistent with and follow from the Quality Management Plan and shall specifically track all design and design verification activities included in the approved Quality Management Plan.
- Be in a format that allows the Consultant and NJ TRANSIT to reasonably understand the means by which each design element of the project is being completed. It shall provide planned versus actual schedule performance and be accurate and useful as a means for NJ TRANSIT to determine how the design is proceeding throughout the design phase of the Project.
- Include subcontracted design elements, if appropriate.

The Consultant shall be liable to NJ TRANSIT for any costs incurred during the Construction Phase to correct, modify or redesign any drawings completed by the Consultant that are later found to be defective, or not in accordance with the provisions of this agreement as a result of any act, error or omission on the part of the Consultant or its agents, servants or employees. The Consultant shall be given reasonable opportunity to correct any deficiencies at no additional cost to NJ TRANSIT.

NJ TRANSIT has developed document formats and requirements for Programmatic submittals in conformance with reporting to be utilized in NJTRANSIT's Superstorm Sandy Recovery and Resilience Program. In order to maintain consistency, such requirements related to Design Control submissions shall be available to the Contractor subsequent to Contract award.

Subtask 1.3.6 - Control of Quality Records

The Consultant shall establish and implement procedures to identify, collect, index, file,

store and retrieve all quality records required by the Contract and generated pursuant to the Quality Management Plan and shall include the records of subconsultants and subcontractors, as appropriate. These procedures shall include an electronic database to track and maintain control over all quality records generated by the Contract, which shall be part of the Records Management System and subject to data transfer to the NJ TRANSIT ECMS system referenced above.

Quality records shall be stored and maintained in such a way that they are readily retrievable and provided with a suitable environment that shall minimize deterioration or damage, and prevent unauthorized alteration or loss.

Quality control records shall be legible, reproducible, and identifiable with the item involved, and contain the date of origination and identity of the originator, verifier, and/or responsible supervisor.

The Consultant shall retain all quality records for a period of seven (7) years from the date of completion of the Project unless otherwise specified in the Contract. All quality records shall be made available to NJ TRANSIT throughout the retention period.

Subtask 1.3.7 - Internal Quality Audits

The Contactor shall establish a procedure for conducting internal quality audits throughout the period of performance of the Contact as follows:

- Perform internal audits at least quarterly.
- Identify in the audit any deficiencies found in the quality system, the causes of deficiencies and the status of corrective action or preventive action, when appropriate.
- Provide the audit results to NJ TRANSIT within five (5) days of the completion of the audit, including required corrective actions.

- Provide a final report to NJ TRANSIT confirming the completion of required corrective actions within thirty (30) days of the audit.

NJ TRANSIT has developed document formats and requirements for Programmatic submittals in conformance with reporting to be utilized in NJTRANSIT's Superstorm Sandy Recovery and Resilience Program. In order to maintain consistency, such requirements related to the Project Quality Audit Reports submissions shall be available to the Contractor subsequent to Contract award.

Deliverables:
Quality Management Plan
Design Control Plan
Internal Quality Management Review reports
Audit Reports
Report of Completion of Corrective Actions

Subtask 1.4 -Peer Review of Design

Prior to the 20% design completion, the Consultant shall conduct a Peer Review of its design in order to validate that the overall engineering, quality, risk and procurement objectives of the Project have been successfully addressed. Additionally the Peer Review shall review the integration of the different systems and disciplines to ensure that this aspect of the Project has been adequately addressed.

The Peer Review shall also include a constructability review and analysis of construction cost estimates and proposed follow-on contract packaging suggestions prepared by the Consultant. The Peer Review team shall consist of senior engineering and project management personnel from the Consultant design team firms who are **not** associated with or have had any knowledge or involvement with the technical details of the Project prior to being assigned to the team. The review team may also involve other

transit agency personnel, and third party consultants. The Peer Review team personnel shall be approved by NJ TRANSIT and shall include selected NJ TRANSIT personnel. Information and data to be presented during the Peer Review shall not be made available to any member of the Peer Review team prior to the review.

The Peer Review discussion and results shall be documented in a report within seven (7) days of the completion of the Peer Review.

Deliverable:

Peer Review Reports

Subtask 1.5 -Configuration Management

The Consultant shall be responsible for configuration management and document change control for its design for the duration of the Project. The Consultant shall prepare and submit to NJ TRANSIT for its approval, a Configuration Management Plan (CMP) which is in accordance with the requirements of ISO 10000. The CMP shall utilize a proven, auditable electronic based configuration management system to its design of the Project. Configuration management of drawings, specifications, documents, reports and analyses is the responsibility of the Consultant. The Consultant shall maintain document change control, including engineering plans, drawings and specifications and shall update all project documents as the design progresses. Configuration management shall provide an accurate historical record that can trace decisions made throughout the life of the Project.

The Consultant shall develop and maintain a Contract Documents Log created in an electronic data base format acceptable to NJ TRANSIT for NJ TRANSIT's review and approval. The Log shall list all design drawings, specifications, design calculations, analyses, reports and other documents to be prepared by the Consultant. Only one (1) version of a document may be effective at any one time. The Log shall function to keep

a history of each document created by the Consultant and its evolutionary status. The Log shall form an integrated part of the Records Management System.

At the end of the Project, the Consultant shall provide NJ TRANSIT in electronic format, a complete configuration management history, fully documenting all required project information, including the final revision status of all design elements that shall allow for the progress of the Project design to proceed.

Deliverables:
Configuration Management Plan – draft and final
Contract Document Log

Subtask 1.6 - Project Meetings

This provision specifies the requirements for project meetings to be held during the term of the Contract. The Consultant shall attend and participate in the meetings set forth herein with NJ TRANSIT, its representatives, government officials or other parties interested in the Project as may be determined by NJ TRANSIT.

The Consultant shall prepare a record of the meetings stating: the date and place, meeting purpose, names and titles of those present, a brief description of the matters discussed, agreements reached/decisions made, action items and the party responsible for taking the identified action. Meeting minutes shall be prepared and provided within seven (7) calendar days from the meeting date to NJ TRANSIT for review and comments. Final meeting minutes shall be issued to all appropriate parties within fourteen (14) calendar days of the meeting date.

NJ TRANSIT shall schedule a kickoff meeting with the Consultant within ten (10) days of issuance of the Notice to Proceed for the Contract. The purpose of meeting shall be to review the parties' responsibilities, major project milestones, procedures and submittals and personnel assignments. This meeting shall be chaired by NJ TRANSIT

and be attended by representatives of NJ TRANSIT, all key personnel identified by the Consultant and all major subconsultants proposed by the Consultant. Agenda items shall include:

- Consultant's personnel roster
- Confirmation of all subconsultants
- Consultant's project schedule, WBS, critical paths and major milestones
- Project Management Plan
- Design Control Plan
- Interface and Integration Management Plan
- Configuration Management Plan
- Quality Management Plan, including quality documents and records to be generated
- Procedures for processing design decisions and approvals
- Procedure for processing applications for payment
- Mobilization Issues

The Consultant shall conduct monthly (or more frequently if deemed necessary by NJ TRANSIT) systems interface and integration meetings throughout the design process in order to ensure that all of the design elements properly interface with each other, and also to assure that the elements properly interface and are integrated with the other elements of the NJ TRANSIT Superstorm Sandy Recovery and Resilience Program and other NJ TRANSIT Capital Programs and the Amtrak Raceway & Gateway Programs (and as provided by other firms or parties). The basis for conducting these meetings is to implement and monitor the Consultant's Interface Management Plan. These meetings shall be attended by the Consultant, NJ TRANSIT and all other parties whose design activities shall interface with the CE/PE Consultant.

The Consultant shall conduct monthly progress meetings with NJ TRANSIT on a regularly established date, convenient for all parties involved (or more frequently if

deemed necessary by NJ TRANSIT). Progress meetings shall be held in addition to other specific meetings held for other purposes. The meeting shall address technical and administrative issues of concern, determine courses of action, develop appropriate deadlines for resolution of issues, and assign individuals responsible for resolution of those issues. The Consultant and NJ TRANSIT shall determine who, in addition to themselves, shall attend the meetings. Additional attendees may include other parties as deemed appropriate for the success of the Project.

Agenda items shall include matters of significance that could affect progress such as:

- Review of the previous meetings minutes and resolution of open items.
- Consultant's CE/PE schedule.
- Interface requirements and coordination with other Amtrak/Yard Consultants.
- Requests for information and/or approvals.
- Changes
- Invoices and Payment Procedures

Status meetings shall be held prior to the submittal of the Consultant's Application for Payment. The purpose of the meetings is to determine that the status of activities as stated in Consultant's Monthly Progress Report and Progress Schedule. This meeting shall be attended by NJ TRANSIT and the Consultant. NJ TRANSIT disposition on the matter shall be documented. The Consultant shall prepare meeting minutes.

Deliverables:
Kickoff Meeting Minutes
Interface and Integration Management Meeting Minutes
Progress Meeting Minutes

Subtask 1.7 - Payment Procedures

This provision specifies the procedures for the Consultant's submission of Applications for Payments under this Contract and NJ TRANSIT's processing of those applications.

The Consultant shall bill monthly and be eligible to receive payment upon successfully achieving verifiable progress and compliance with the requirements of this provision and any other applicable provisions of the Contract.

The Consultant shall notify NJ TRANSIT in writing that it has achieved verifiable progress and requests reimbursement in connection with said progress. NJ TRANSIT shall ascertain whether the claimed progress has been achieved or not during the status review meetings and by review of valid Progress Reports as prescribed above.

Applications for payment shall at a minimum contain:

- The Consultant's name and address.
- The remittance address or bank to which payment is to be made.
- The Contract name or title ,Contract number and Purchase Order number.
- An actual invoice for the amount identified above plus any other amounts due the Consultant under any other provision of the Contract signed by the Consultants Project Support Manager.
- The Consultant's certification that the amount requested is due and payable under the Contract and has not been previously invoiced or paid
- Certified Payrolls (timesheets not required).
- Supporting documentation for all expenses incurred.
- DBE participation levels.

NJ TRANSIT shall promptly review the Consultant's Application for Payment upon receipt for accuracy and conformance with the above and shall prepare and issue a Payment certificate, with a copy provided to the Consultant, showing the amount payable by NJ TRANSIT to the Consultant.

NJ TRANSIT may, by any payment, make any correction or modification that should

properly be made to any amount previously considered due and paid by NJ TRANSIT.

A payment issued by NJ TRANSIT shall not be construed as waiving any rights of NJ TRANSIT under the Contract or to be an acceptance of the Project or any portion thereof nor shall it relieve the Consultant from any requirement or responsibility under the Contract or from replacing or revising unsatisfactory work for which it is responsible.

Deliverables:

Applications of Payment

Final Invoice

TASK 2 - Engineering

The engineering of major elements of the Project shall be required, including value engineering analysis. This design effort shall generally be progressed to the 10% and then to 20% design level. However, the actual level for each element shall be coordinated with the NEPA, Permitting and Regulatory Compliance engineering data requirements as well as Risk Assessment, and Contract Packaging tasks to produce the best value for NJ TRANSIT to move the project forward to completion.

The elements include but are not limited to the traction power 104 MW microgrid to support train operations, supplied by a large gas-fired generation Plant including, foundations, earthwork, Plant enclosures, natural gas supply and plant interconnections, natural gas fired power generators, transmission and distribution infrastructure (including but not limited to, circuits, i.e. cabling, transformers, frequency converter(s) as applicable), Plant function and control architecture and hardware. The electrical power supply to support train operations must accommodate traction, signal, ventilation, pumps, compressors, track switches, snow melters, and communications. Some house power (stations or other facilities) may be powered by the central power plant.

Required design elements shall also include methods for satisfaction of project environmental, regulatory compliance requirements, staging options and cost

implications to Project Design and Construction. A proposed construction schedule, including maintenance of passenger rail operations during construction, i.e. operating windows, shall also be developed as part of this task. The format of the proposed Construction Schedule shall be consistent with NJ TRANSIT's Superstorm Sandy Recovery and Resilience Program requirements. Such requirements shall be available subsequent to Contract award.

Project General Plan and Specification Requirements:

As applicable, the Consultant shall provide all necessary architectural, engineering and professional services required to prepare all contract plans, technical specifications, special provisions, and a detailed cost estimate and bid documents for all sections of the proposed work. The construction plans shall be on 24" x 36" with standard NJ TRANSIT title box and shall consist of: Key Map, Location Map, Estimate of Quantities, Distribution of Quantities sheet, Site Plan, Elevations, Sections, Typical Sections Standard Details, etc. Certain copies of design development drawings may be half-size as designated and/or agreed by NJ TRANSIT. Specifications and supplemental specifications shall conform to CSI format or other acceptable format as pre-approved by NJ TRANSIT. Use of graphics shall conform to the NJ TRANSIT Graphics Manual where applicable. Construction plans shall be prepared with a computer-assisted drafting program; disks containing final design drawings shall also be submitted to NJ TRANSIT.

For Amtrak facilities, Amtrak standards shall be met. These Standards are readily available from Amtrak.

The Consultant shall coordinate the plans with other project tasks as necessary to advance the design to the 10% level then to the Preliminary Design level (approximately 20%). Develop a construction plan for each site showing all elements to be constructed. Such plans shall detail requirements as applicable for natural gas supply and connection, electrical power distribution/transmission and interconnection, water, sewer,

communications, parking, roads, traffic signalization and rail signalization modifications as well as catenary energizing as applicable. In addition, the electrical plans shall include location of cable and conduit runs and lighting as applicable.

The civil drawings shall graphically depict the proposed power plant layout and NJDEP Land Use Program as well as ACOE regulatory limits of disturbance for the selected Project footprints. Demolition of structures and utilities shall also be identified as applicable. The structural drawings shall depict the type of structures necessary and the size and type of foundations to be proposed. The geotechnical design shall include a report and foundation recommendations. A construction-staging plan shall describe potential methods and sequence of construction to complete the project while maintaining passenger service where applicable. The hydraulic design shall include the delineation of the drainage patterns for the Power Plant and appurtenances. The location of drainage features shall be defined and sized. Drainage requirements in floodplains and wetland areas shall be defined. A report describing the entire drainage program for the project shall be prepared discussing the impacts and requirements of NJDEP and USEPA and taking into account guidance per AASHTO / NJDOT criteria. It is the Consultant's responsibility to ensure that all plans and drawings developed for this Project shall comply with project permit conditions and associated regulatory compliance requirements. Upon the direction by NJ TRANSIT, the Consultant shall be prepared to demonstrate said compliance. Preliminary Design drawings, specifications, schedules and associated documents shall be prepared consistent with the standards set forth in the RFP and shall include at least the following information:

1. Cover Sheet
2. Index of Drawings
3. Site Drawings
4. Plant Plans, Profiles and Cross Sections.
5. Plans, Elevations, Sections and other details pertinent to the feature of Design.

6. Design Analyses, shall completely cover the electrical design requirements for electrical systems necessary for the Project. It shall be used to justify Concept Design and verification. The Basis for Design shall include a concise outline for functional features, including a description of existing systems and other considerations affecting the design. In addition, a full description of any special requirements and justification for any proposed departure from standard criteria are required. The Analysis shall be separately bound and labeled and sufficiently complete to permit review of:
    a. Structural analyses
    b. Mechanical analysis with line diagrams
    c. Electrical analysis with line diagrams and load protection
    d. Special features (e.g. automated systems, corrosion prevention, etc.)
    e. Site security (as applicable)
    f. As applicable, project utilities such as telephone, communications, lighting, etc.
    g. An estimate of total connected loads, power factors, demand factors, diversity factors, load profiles where required, resulting demands and sizes of proposed transformers and frequency converters to serve either the complete project or the various portions involved shall be provided
    h. The basis for selection for primary and secondary distribution voltages and of overhead or underground construction shall be provided
    i. Computations shall be provided to indicate that systems and materials are adequate but not over designed and are correctly coordinated
7. Technical Specifications.
8. Statement of Estimated Construction Costs and Schedule (staging if appropriate) in sufficient detail (quantity take-offs) so as to permit evaluation. The format of the Cost Estimate reports shall be consistent with NJTRANSIT's Superstorm

Sandy Recovery and Resilience Program requirements. Such requirements shall be available subsequent to Contract award.

9. Modifications to Electric traction power supply, catenary and signal power sectionalization Plans.

Plans, Profiles and Section Drawings

- Develop a plan for use in cost estimating and display of plans and profiles for NJ TRANSIT review and approval.
- Prepare plans, profiles, typical sections, and sketches in sufficient number and detail to define and allow for the evaluation of the alternative construction and implementation concepts.
- Support NJ TRANSIT complete permit applications as required and directed by NJ TRANSIT, in a format for presentation of plan, profiles and sections, for use in an 11” x 17”, or 8.5” x 11” report in both hard copy and electronic format. Plan and profile drawings for these purposes shall be presented in the report and as reductions of the full-size drawings. Plans for special facilities for these purposes shall also be presented in the report as reductions of the full-size drawings. The formats shall be submitted to NJ TRANSIT followed by other agencies for prior review and approval.

Deliverables

- Drawing formats for approval;
- Technical Memoranda documenting additional engineering studies as required (15 copies);
- Review Set, plan and profile drawings for the, sections at appropriate scales;
- Final Set, plan, profile and section drawings as above (15 copies CADD files on CD-Disc);
- Review set, 11” x 17” and 8½” x 11” drawing reductions as above (15 copies originals plus CADD files on Disc).

(Note: For the facilities that will be owned and maintained by Amtrak , Amtrak may elect to further modify requirements relative to the types and scales of drawings required.)

In addition and in order to facilitate reviews, the drawings shall also be made available on the project website and formatted as adobe documentation.

Note on use of CADD: Due to the many differing needs of NJ TRANSIT and outside interested parties for review of specific elements of the projects, it shall be necessary to reproduce the design documents. They shall require enlargement, downsizing, and modification, showing without certain elements or emphasis on certain elements. To facilitate these requirements, the use of computer-aided design and drafting (CADD) is required. The Consultant shall accommodate such requirements in its proposed resource allocations.

The Preliminary Design documents shall be submitted in 15 copies [10 half-scale and three full-size set of plans] to NJ TRANSIT for review and comment. Any comments /revisions generated as a result of the review process shall be incorporated during the Final Design Task.

CADD Standards Manual: The documents shall be submitted in both their original software format (e.g. WORD, EXCEL, CAD, Photoshop) and as pdf files. The electronic submittals can also be provided via FTP Site**.**

General Notes: The preparation of all Project plans, details and sections, related but not limited to natural gas supply and connection, electrical power distribution/transmission and interconnection, water, sewer, communications, parking, roads, traffic signalization and rail signalization as well as catenary energizing, roadway alignment, Plant structural, right-of-way, architectural, building systems including layout plans, shall be guided by the following requirements;

i. All Project documents shall be developed by the Consultant at such scales and

of sufficient detail to indicate the full extent of work required;

ii. The engineering and/or construction shall consist of: Key Map, Location Map, Estimate of Quantities, Distribution of Quantities sheet, Site Plan, Elevations, Sections, Typical Sections, standard Details, etc.

iii. All design work shall be incorporated on plans on a scale of at least 1" = 20'. Architectural plans shall be developed to a similar scale. Certain engineering drawings may be half-size;

iv. More detailed structural drawings shall be prepared at the appropriate scales to depict necessary details;

v. All contract documents must be made with a computer-assisted drafting program so long as the elements specified herein are included. The latest or applicable version of AutoCAD shall be used in accordance with NJ TRANSIT's CAD standards. [Note: Amtrak owned and maintained facilities shall be drawn using Amtrak CAD standards. MicroStation for Amtrak signals, NJ TRANSIT C&S, AutoCAD for other applications – the Consultant shall confirm the version in use by NJ TRANSIT and Amtrak – NJ TRANSIT standard libraries shall be used as applicable].

vi. Design calculations for the work shall be recorded on 8½" x 11" calculation paper, shall be indexed by subject and electronic copy provided;

vii. All plans and calculations shall be signed and dated by both the designer and checker, and shall be compiled in separate volumes for future reference;

viii. Specifications and supplemental specifications shall conform to the Construction Specification Institute (CSI) format;

ix. All computer runs shall be reduced to similar size, indexed and compiled with input and output identified;

x. Sketches, as may be required, shall accompany design calculations to outline design concepts and results; and

xi. Signed and sealed survey drawings of all base maps surveyed for the preparation of the project plans including draft ROW metes and bounds descriptions.

Deliverables:

10% Plans & Specifications
50% complete interim 20% Plans & Specs review package
100% complete final 20 % Plans and Specs review package

ELECTRIC POWER LOADS

The overall performance objective is to enable rail transportation capability even in the event that electricity cannot be supplied from the existing grid as a result of an event consistent with the Project's **Design Basis Threat (DBT)**.

The design shall provide for a power plant which has the capacity to provide the quantity and type of electric power required. The two operating modes will be: a non-emergency mode that shall supply continuous power to meet approximately 50 MW of Northeast Corridor needs and approximately 50 MW of NJ TRANSIT power needs; an emergency Islanded Mode that shall meet the power needs for the Incident Transportation Plan.

The following information, as applicable, is required for design:
(1) Forecast of annual diversified peak load to be served by the project.
(2) Typical seasonal and daily load curves and load duration curves of the load to be served.

(3) If the plant is to operate interconnected with the local utility company, the Consultant shall develop information such as capacity, rates, metering, and interface switchgear requirements.

(4) If the plant is to operate in ISLANDED MODE, the Consultant shall also develop:

(a) Estimated operating power consumption data for each element required to implement the transportation plan

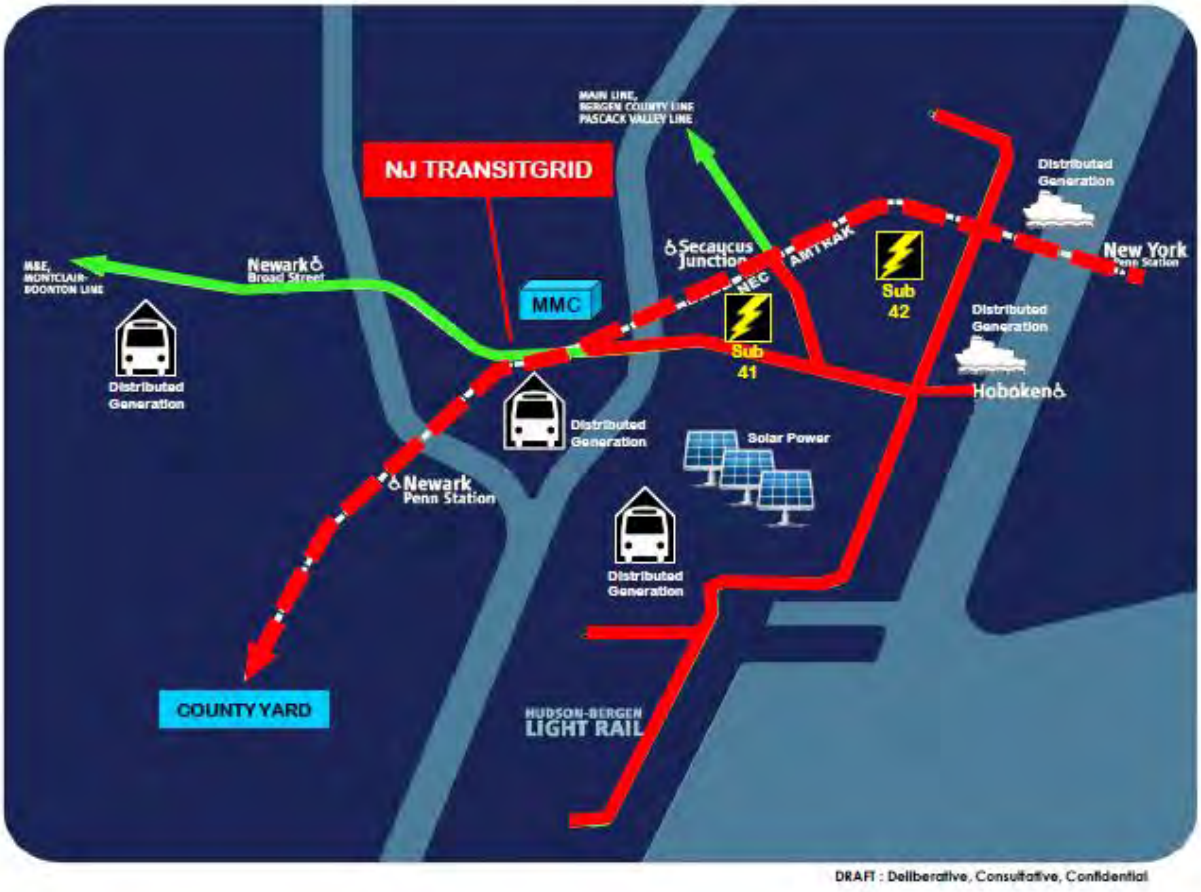
(b) Recommended distribution voltage, generator voltage, and interconnecting substation voltages.

The system shall be designed to minimize the need for significant upgrades to existing utility distribution or transmission systems.

INCIDENT TRANSPORTATION PLAN

The overall service goal is to transport as many people as possible to greater Newark, the New Jersey Hudson River Waterfront in Hudson County, or the Manhattan Central Business District (south of 59th Street) utilizing an array of bus, commuter rail, light rail, rapid transit and ferry services. While some services will operate in a limited manner because of available electrical power, and some will operate fully, all will benefit from the implementation of the NJ TransitGrid.

Within New Jersey, a limited portion of the NJ TRANSIT commuter rail system in northern New Jersey will have electrical power provided to it from the NJ TransitGrid to sustain a core system operation. NJ TRANSIT's intrastate bus services will be operating and interstate bus services will be redirected to locations where travelers can transfer to available trans-Hudson services. NJ TRANSIT will be operating the Hudson Bergen Light Rail Line to provide transit service to the New Jersey Hudson River waterfront in Hudson County, NJ. There are four (4) primary locations where trans-Hudson travelers will be able to board public transit into Manhattan: Hoboken Terminal, Secaucus Junction, Weehawken Ferry Terminal, and Newark Penn Station. There are also a few smaller locations where travelers will be able access lower capacity private ferry services. While the focus is on AM peak period demand, it is assumed a PM peak period service will also be provided where historically demand is more spread out.


MAIN LINE,
BERGEN COUNTY LINE
PASCACK VALLEY LINE
NJ TRANSITGRID
M&E,
MONTCLAIR-
BOONTON LINE
Newark
Broad Street
MMC
Secaucus
Junction
NEC
AMTRAK
Sub
42
Sub
41
Distributed
Generation
New York
Penn Station
Hoboken
Solar Power
Newark
Penn Station
COUNTY YARD
HUDSON-BERGEN
LIGHT RAIL
DRAFT : Deliberative, Consultative, Confidential

Major Public Transit Travel Modes: Eastbound Dominant

Trans-Hudson AM Flows

This is a public transit operating scenario associated with the proposed implementation of a microgrid electrical power generation and distribution system. The system would be located within a limited geographic area of northern New Jersey containing the core of the critical public transit system serving Newark, Hudson County, the NJ Hudson River Waterfront and Manhattan, NY. All of these locations are characterized by very high transit dependency, both for work and nonwork trips.

Critical Assumptions:

- No electrical power from grid in northern New Jersey and Manhattan.
- No power for ventilation of Lincoln and Holland Tunnels.
- No power for traffic lights at intersections or at-grade crossing gates.
- No power for Port Authority Bus Terminal or George Washington Bridge Bus Station.
- No subway service in New York City. Local bus service is operating.
- No service on Newark Light Rail.
- No Amtrak service.
- The system is managed to balance demand on public transit services more evenly over four (4) hour AM peak period (6-10 AM) – transit service will continue outside of this peak period time but at a lower frequency and capacity.
- A PM peak period service plan will be implemented to match the volumes of AM peak period inbound travelers.
- Highways and major roads are usable as are arterials with police assistance at intersections (possibly using barricades to prevent turning movements).
- NJ TRANSIT intrastate bus routes will operate as close to normal schedule as permitted locally.
- National electrical grid feeding northern New Jersey and Manhattan initially shut down completely, and subsequently impaired from normal operation with full power restoration not achieved for two (2) weeks requiring alternate power supply.

THE NJ TransitGrid Powered Facilities and SServices[2]: Base Case Scenario

- Power for switches and signals only for NJ TRANSIT-owned lines:
  - Bergen County/Pascack Valley to Sports Complex via Secaucus Junction to Hoboken Terminal using diesel powered trains.
  - Morris & Essex Line trains operate from Maplewood to Hoboken Terminal
    - using diesel powered trains (no use of overhead electrical power)
- Northeast Corridor switches and signals powered, electrical/diesel powered
    - trains operate from North Brunswick to Newark Penn Station. Limited service continuing into Penn Station New York (PSNY)
- Hudson-Bergen Light Rail fully powered.
- Hoboken Terminal fully powered (able to accommodate all modes).
- Weehawken Ferry Terminal fully powered with service to Manhattan.
- Newark Penn Station and Frank R. Lautenberg Transportation Center at Secaucus Junction operable (able to accommodate all modes), PSNY, partial power sufficient to accommodate limited NJ TRANSIT service.
- Rail system is otherwise physically undamaged and capable of supporting operation of a limited number of trains.
- Although the focus of this exercise is on the dominant AM eastbound flows, rail, bus, ferry and light rail services will also operate in the reverse direction during these time periods.
- NJ TRANSIT and private interstate buses will be diverted to selected intercept locations where passengers can transfer to functioning trans-Hudson modes (PATH, Rail into PSNY and Ferry into Manhattan).

Specific NJ TRANSIT Commuter Rail Lines/Services NOT Operating:

- Raritan Valley Line
- North Jersey Coast Line
- Bergen County Line (other than using line to get to Sports Complex)

- Main Line
- Pascack Valley Line (other than trains operating on it for short distance to access Sports Complex)

([2] Assume these services are operational 24 hours after power outage begins. This allows time to position transit equipment and operating personnel. If the outage is tied to a weather condition, transit equipment may be stored someplace other than in its normal location.)

- Montclair-Boonton Line
- Gladstone Branch
- Morris & Essex west of Maplewood
- Northeast Corridor west of North Brunswick
- Port Jervis Line (although it is operated under contract to Metro North Railroad it must use either the Bergen County Line or Main Line to reach Hoboken Terminal, the terminus of this service)

Two main issues prevent operations on these rail lines:

- No power for at-grade crossing gates, impractical to effectively staff every at grade location; and,
- No ability to distribute power to signals and switches to outlying areas.

Bus Services Not Operating:

- No Lincoln or Holland Tunnel bus service due to lack of power for ventilation fans
- No buses into Port Authority Bus Terminal or George Washington Bridge Bus Station because of electrical power limitations permitting full functioning of these facilities

Light Rail Services Not Operating:

- Newark Light Rail will not be operating but NJ TRANSIT will provide parallel bus

services and enhance other bus services serving the same general ridership markets.

CYBERSECURITY

The Project's critical nature requires a robust cybersecurity architecture. As a baseline, industry standard best practices for typical power grid industrial control systems (ICSs), including those found in NERC Critical Infrastructure Protection (CIP) and the National Institute of Standards and Technology (NIST) Interagency Report (IR) 7628, shall be incorporated in the design. However, a goal of the project is to make the project more robust than ICSs given that the microgrid shall be used in emergency situations and may be critical to emergency operation continuity. In addition to referenced best practices, additional rigor shall be applied to strengthen the microgrid control system's defense-in-depth. To further enforce defense-in-depth and expand on industry standard best practices, segmentation strategies within the microgrid control system itself are required to reduce the risk of widespread control system damage as a result of malicious activity or unexpected failures.

At a minimum, the Consultant shall address the following in their proposal as they relate to hardening of the cybersecurity aspects of NJ TransitGrid controls:

Policy/Procedural

- Developing and maintaining security policies, procedures, training and educational material that applies specifically to the microgrid control system.
- Establishment of a cross functional cyber security team is required and should consist of IT staff, control engineer, control system operator, network and system security experts, management staff, and physical security department member at minimum.
- Addressing security throughout the lifecycle of the microgrid control system, including architecture design, procurement, installation, maintenance, and decommissioning.

- Evaluate control system security policies and procedures based on the Homeland Security Advisory System Threat Level and deploy increasingly heightened security postures as the Threat Level increases.
- Reviewing user accounts on regular basis and providing a means of quickly changing accounts when access privileges change (e.g., employment termination).
- Authentication/Encryption
- The use of separate authentication mechanisms and credentials for users of the control system network and corporate network.
- Restricting user privileges to only those that are required to perform each person's job (i.e., establishing role-based access control and configuring each role based on the principle of least privilege).
- Applying security techniques such as encryption and/or cryptographic hashes to control system data storage and communications where appropriate.
- Using modern technology, such as smart cards, for additional factors for identity verification.

Segmentation

- Implementing a network topology for the control system that has multiple layers, with the most critical communications occurring in the most secure and reliable layer.
- Providing physical separation between the corporate and control system networks.
- Employing a DMZ network architecture to prevent direct traffic between corporate and control system networks while allowing historian data transfer.

Redundancy/Spares

- Ensuring that critical components are redundant and are on redundant networks.
- Designing critical systems for graceful degradation (fault tolerant) to prevent catastrophic cascading events.

Physical Protection

- Restricting physical access to the control system network and devices.

Monitoring/Audit

- Tracking and monitoring audit trails on critical areas of the control system.
- Establishing use restrictions, monitors, and effectively managing access to the control system.

Change Control

- Expeditiously deploying security patches after testing all patches under field conditions on a test system if possible, before installation on the control system.

Security Controls

- Implementing security controls such as intrusion detection software, antivirus software, and file integrity checking software, where technically feasible, to prevent, deter, detect, and mitigate the introduction, exposure, and propagation of malicious software to, within, and from the control system network.
- Disabling unused ports and services on control system devices and networking equipment.
- Establishing usage restrictions and implementation guidance for allowing remote vendor connections, including authorization of remote access before each connection, automatic session termination, and physical disconnection of remote connection when complete.
- Implementation of strong, non-default passwords and two-factor authentication where feasible.

General Central Power Plant Design Attributes

Reliability. Plant reliability standards shall be developed as part of the Design Criteria development.

Maintenance. Power plant arrangement shall permit reasonable access for operation and maintenance of equipment. Careful attention shall be given to the arrangement of equipment, valves, mechanical specialties, and electrical devices so that rotors, tube bundles, inner valves, top works, strainers, contractors, relays, and like items can be maintained or replaced. Adequate platforms, stairs, handrails, and kickplates shall be provided so that operators and maintenance personnel can function conveniently and safely.

Future expansion. The specific site selected for the power plant and the physical arrangement of the plant equipment, building, and support facilities such as natural gas supply connection systems, circulating water system, trackage, and access roads shall be arranged insofar as practicable so as not to preclude future expansion.

Intraplant Communications.
Installation of a high quality voice communication system in a power plant and in the immediate vicinity of the plant is vital to successful and efficient startup, operation and maintenance. The communications system selected shall be designed for operation in a noisy environment.

Efficiency and Environmental Considerations. In addition to assessing cost and capacity, and considering maintenance, future expansion, and other considerations, the Consultant shall identify technologies or other design considerations that have the capacity to reduce potential emissions or to improve energy efficiency, through heat recovery or other methods, of power plant operations for consideration by NJ TRANSIT.

On the basis of concept designs provided to the Consultant by NJTRANSIT, the Consultant shall produce approximately 20% design plans and specifications, with

drawings at 1" = 20' scale. The 10% Design Documents as detailed and required in Task 2, shall serve to fix and describe the size and character of the project as to structural, mechanical, communication and electrical systems including project related modifications of existing catenary systems, interconnections to the existing commercial grid, connections to natural gas supply pipelines, generation/transmission/distribution and related equipment, schedules and other essentials as appropriate. The 20% design plans shall include a 50% progress set (midpoint in the generation of the Preliminary Engineering package) for NJ TRANSIT review and the final or 100% Preliminary Engineering set for NJ TRANSIT review and approval.

Subtask 2.1 - Verification of Concept Design Criteria

The objective of this subtask is to ensure accuracy and update information and engineering/design data developed during previous NJ TRANSIT efforts in order to develop the project Design Criteria or 10% Design Documents. This activity is a prerequisite to initiating further engineering on the Project. The Design Criteria shall be prepared for review and approval by NJ TRANSIT. Once approved by NJ TRANSIT, the Design Criteria shall be utilized by the Consultant to progress engineering.

A list of relevant documents previously developed by NJ TRANSIT can be found in the FTA Grant Application for the Project dated March 25, 2014 and which is included as part of this RFP with emphasis on the following:

- Sandia Report Phase I dated February 2014
- Incident transportation Plan

Pivotal Design Criteria considerations include but are not limited to:

- A thorough analysis of power usage, projected and temporal, with regard to peak and non-peak loading. Similarly, ramping of power demand will also require characterization. Project/System Power demand characterization from a generation, transmission and distribution perspective relative to operation of the

NJ TRANSIT Mason Substation, HBLR operational demands and the Amtrak Northeast Corridor Project segment must also be analyzed.

- Power Plant configuration accounting for physical footprint and general layout requirements shall also be determined. (Discussed further in Subtask 1.2.1 – Power Plant Design).

Physical design parameters/specifications (including electrical power loads) and construction requirements for Transmission and Distribution infrastructure to support railroad operations (These parameters are discussed in further detail in Subtask 1.2.2 - Electric Traction Power Facilities and Power Management Design) ;

- NJ TRANSIT Mason Substation;
- Amtrak Sub-41and Sub 42 {Discussed further in Subtask 1.2.2.1 – Amtrak Electric Traction Power/Overhead Catenary System Sub 41 (Kearny Substation)};
- HBLR transformer operation;
- Other NJ TRANSIT identified Project transformers;
- Power distribution to rail signal, control and communication systems.

Another key component of Concept Design verification is the selection and verification of appropriate gas-fired power generation technology. The Consultant shall assist NJ TRANSIT in this selection by providing a comprehensive review and summary of available gas fired technologies to achieve the requisite power generation capability for the NJ TransitGrid. For the Central Power Plant, based on recommendations and analysis by Sandia, NJ TRANSIT is currently considering Combined-Cycle Gas Turbine Technology, Reciprocating Engine Technology, or a combination of the two technologies in order to accommodate requirements related to minimum operating load, ramping capability, and cycling (start-stop) that must be met in order to operate an islanded scenario versus grid connected. As part of this evaluation, the Consultant shall characterize a cost-benefit analysis of gas turbine power generation versus reciprocating engine power generation, accounting for maximum operational efficiencies in the grid connected mode and islanded modes, related emission characteristics, the

use of simple cycle generation versus combined cycle generation as applicable along with the use of heat-recovery steam generators as practicable. Finally, the Consultant shall verify the peak load assumptions of the Power Plant, i.e. the 104 MW capacity is optimal to achieve stated electric traction and associated rail infrastructure power demands and advise NJ TRANSIT accordingly. This review shall apply to both the Grid Connected as well as Islanded modes of operation. A plant capable of starting and running without receiving power from the grid is required. Plant configurations must be designed to be black-start capable. A life cycle cost analysis shall be presented in support of the Consultant's conclusions.

The results of this study shall be provided to NJ TRANSIT in report form for review and approval. As noted above, this effort is a pre-requisite before commencing Preliminary Engineering.

Deliverable:
10% Design Documents
Design Criteria Manual

Gas Fired Technology Analysis Report for NJ TransitGrid

Subtask 2.2 – Engineering and Design

Design of the reinforced concrete gas turbine/reciprocating engine (or other technology selected) and turbine generator set foundations, both mat and pedestal, shall be such that the foundation is isolated from the main building foundations and structures by expansion joint material placed around its perimeter. The design shall also insure that the resonance of the foundation at operating speed is avoided in order to prevent cracking of the foundation and damage to machines caused by resonant vibration. The foundation shall be designed on the basis of deflection. The limits of deflection shall be selected to avoid values of natural frequency by at least 30 percent above or 30 percent below operating speed.

Subtask 2.2.1 – Power Plant Design

Based upon the developed project concept plans, the design of the new Power Plant and associated electric power distribution/transmission facilities shall be coordinated with other related tasks. The work shall include:

Buildings

Main building size and arrangement shall depend on the selected plant equipment and facilities including combined cycle gas turbine or reciprocating engines whose hot exhaust may power a steam power plant (HRSG heat-recovery steam generators) thereby increasing power generation thermal efficiency; source of cooling water supply relative to the plant; the relationship of the switchyard to the plant; provisions for future expansion and aesthetic and environmental considerations.

1. The main building shall consist of engine and turbine bays with traveling crane; an auxiliary bay for feed water heaters, pumps, and switchgear; a steam generator bay and general spaces as may be required for machine shop, locker room, laboratory and office facilities;
2. The general spaces shall be located in an area that shall not interfere with future plant expansion and isolated from main plant facilities to control noise;
3. For semi-outdoor or outdoor stations, enclosures for switchgear and motor controls for the auxiliary (black start) power system shall be enclosed in manufacturer supplied walk-in metal housings or site fabricated closures;
4. [redacted]

Floors

Except where grating or checkered plate is required for access or ventilation, all floors shall be designed for reinforced concrete with a nonslip finish.

Live loads

Buildings, structures and all portions thereof shall be designed and constructed to support all live and dead loads without exceeding the allowable stresses of the selected materials in the structural members and connections.

Other loads

In addition to the live and dead loads, the following loadings shall be provided for:

(a) Wind loading. Building shall be designed to resist the horizontal wind pressure available for the site on all surfaces exposed to the wind and in accordance with any applicable code or standards requirements;

(b) Seismic loading. Buildings and other structures shall be designed to resist seismic loading in accordance with the zone in which the building is located and in accordance with any applicable code or standards requirements;

(c) *Equipment loading.* Equipment loads are furnished by the various manufacturers of each equipment item. In addition to equipment dead loads, impact loads, short circuit forces for generators, and other pertinent special loads prescribed by the equipment function or requirements shall be included.

(d) *Foundation design.* Foundations shall be designed to safely support all structures, considering type of foundation and allowable bearing pressures.

4. Vibration mounts or “floating floor” foundations where equipment or equipment foundation inertia blocks are separated from the main building floor by springs or precompressed material shall generally not be used in power plants except for ventilation fans and other building service equipment. In these circumstances where such inertia blocks are considered necessary for equipment not normally so mounted, written justification shall be included in the project design analysis supporting such a necessity.

5. The location of turbine generators, gas turbine/reciprocating engine sets (or other technology selected), boiler feed pumps, draft fans, compressors, and other high speed rotating equipment on elevated floors shall be avoided because of the difficulty or impossibility of isolating equipment foundations from the building structure.

Safety

The following general requirements with regard to safety shall be incorporated;

(1) Equipment shall be arranged with adequate access space for operation and for maintenance. Wherever possible, auxiliary equipment shall be arranged for maintenance handling by the main turbine room crane.

(2) Safety guards shall be provided on moving parts of all equipment.

(3) All valves, specialties, and devices needing manipulation by operators shall be accessible without ladders, and preferably without using chain wheels. This can be achieved by careful piping design, but some access platforms or remote mechanical operators may be necessary.

(4) Impact type handwheels shall be used for high pressure valves and all large valves.

(5) Valve centers shall be mounted approximately 7 feet above floors and platforms so that rising stems and bottom rims of handwheels shall not be a hazard.

(6) Stairs with conventional riser-tread proportions shall be used. Vertical ladders, installed only as a last resort, must have a safety cage if required by the Occupational Safety and Health Act (OSHA).

(7) All floors, gratings and checkered plates shall have non-slip surfaces.

(8) No platform or walkway shall be less than 3 feet wide.

(9) Toe plates, fitted closely to the edge of all floor openings, platforms and stairways, shall be provided in all cases.

(10) Adequate piping and equipment drains to waste shall be provided.

(11) All floors subject to washdown or leaks shall be sloped to floor drains.

(12) All areas subject to lube oil or chemical spills shall be provided with curbs and drains,

(13) Adequate illumination shall be provided throughout the plant. Illumination shall comply with requirements of the Illuminating Engineers Society (IES) Lighting Handbook

(14) Comfort air conditioning shall be provided throughout control rooms, laboratories, offices and similar spaces where operating and maintenance personnel spend considerable time.

(15) Mechanical supply and exhaust ventilation shall be provided for all of the power plant equipment areas to alleviate operator fatigue and prevent accumulation of fumes and dust. Supply shall be ducted to direct air to the lowest level of the power plant and to areas with large heat release such as the turbine or engine room and the boiler feed pump area. Evaporative cooling shall be considered in low humidity areas. Ventilation air shall be filtered and heated in the winter also, system air flow capacity should be capable of being reduced in the winter. Battery room (as applicable) shall have separate exhaust fans to remove hydrogen emitted by batteries.

(16) Noise level shall be reduced to at least the recommended maximum levels of OSHA. Use of fan silencers, compressor silencers, mufflers on internal combustion engines, and acoustical material is required. Consideration should be given to locating forced draft fans in acoustically treated fan rooms since they are usually the largest noise source in a power plant. Control valves shall be designed to limit noise emissions.

(17) A central vacuum cleaning system should be considered to permit easy maintenance of plant.

(18) Color schemes shall be psychologically restful except where danger must be highlighted with special bright primary colors.

(19) Each equipment item shall be clearly labelled in block letters identifying it both by equipment item number and name. A complete, coordinated system of pipe markers shall be used for identification of each separate cycle and power plant

service system. All switches, controls, and devices on all control panels shall be labelled using the identical names shown on equipment or remote devices being controlled.

a. Provide 1" = 20' scale layouts of Power Plant, substations and associated transmission/distribution infrastructure, along with grading, catenary, utility and drainage requirements, as well as construction cost estimates and half-size drawings. One set of copies shall also be required.

b. The Consultant is advised that supporting documentation accompanying this RFP are the result of a conceptual design phase to assist in ascertaining the optimum physical layout and construction for this project. Particular attention should be focused on NJ TRANSIT and Amtrak requirements with regard to the introduction of new equipment in rail facilities.

c. The goal of this subtask is to establish baseline design criteria compatible with the 20% design package that shall be advanced to final design in the next Project Phase. While the data obtained in other sections may provide some of the standards and design criteria, this information shall be augmented through detailed discussions with NJ TRANSIT and Amtrak personnel in the engineering, maintenance, and operations departments as well as representative staff of regional power generation, transmission and distribution agencies and regulatory authorities. If not already available in published standards, the criteria and design parameters established through these discussions shall be documented for use on this Project, and a minimum shall include the following:

- Power Plant and facilities design
- Electric Power Transmission and Distribution Facilities
- Catenary vertical and horizontal alignment
- Permanent and temporary clearance restrictions
- Typical subgrade cross sections
- Drainage standards

- Slope Protection Standards

6. The above list is not all inclusive, but is shown to illustrate the nature of criteria and parameters that must be established for consideration of constructability studies. The design criteria shall be in accordance with applicable standards and/or recommendations set forth by;

   American National Standards Institute (ANSI), American Society of Mechanical Engineers, Institute of Electrical and Electronic Engineers, National Electrical Manufacturer's Association, National Fire Protection Association, current NJ TRANSIT and Amtrak design standards as applicable as well as AREMA design standards, where applicable. The Consultant shall attempt to improve upon these criteria with regard to increasing and/or improving Plant operations, power distribution and transmission, if possible.

Deliverable:

Design Plans and Specifications of the new Power Plant and associated electric power distribution/transmission facilities as detailed above.

Subtask 2.2.2 - Electric Traction Power Facilities and Power Management Design

Generator Control

- [redacted]
- Local generator controls must regulate local voltage and frequency during microgrid operation and be retrofitted with control switchgear that enable paralleling and synchronizing to the grid, safely disconnecting from the grid, and synchronizing and paralleling with other generators.

- Generators and local controllers must also provide adequate dynamic response so that transient stability shall be maintained for load steps, generation unit outages, and faults.
- Controllers must be enabled to respond to EMS and SCADA commands to support microgrid operations and market based decisions.
- Generator controllers at isolated facilities shall have network capabilities to support monitoring functions.
- In the event of CHP implementation, continuous monitoring and control shall be implemented by recording vital operational parameters (e.g., heat and power outputs, fuel consumption, water consumption, gas pressure and temperature, etc.) and reporting alarm conditions to the control center.

Generator controllers shall provide provisions for remote starting and stopping, exciter set-point control, and provide detailed operational data for monitoring and situational awareness purposes.

Load Control

- Monitoring of microgrid loads shall be conducted and configured to record real power, reactive power, frequency, and voltage for all buildings and feeders.
- Load data must be recorded at high enough fidelity to conduct load-shedding schemes should they become necessary.
- Inrush current mitigation strategies shall be implemented for all problematic loads, including large motor loads, transformers, and trains (e.g., VFDs shall be used for large ventilation fans, such as those in the Bergen tunnel, if not already).
- Load control must be implemented in all single-phase systems to maintain proper phase balancing, as outlined in ANSI / NEMA MG 1-2006.
- Automation shall be added to medium and /or low voltage switchgear to regulate load connections, depending on the building/equipment location and cost (e.g., track heater shall be controlled to avoid stress on microgrid generation plant).

- Real-time and historical load data for all building and feeder loads during both islanded and normal operation shall be collected and used to provide metrics for decision making based on predicted or expected load.
- Smart metering shall be implemented to collect load data and augment grid telemetry.
- Grounding schemes need to be maintained during microgrid operations.
- During microgrid operation, rail operation mitigation strategies shall be implemented to reduce stress on power system if needed (e.g., run trains slower than normal operation).

Distribution and Protection System

- Overcurrent relays, synchronizing relays, breakers, and fuses shall be necessary to protect the distribution system assets during islanded conditions, normal operations, and the brief transition intervals.
- All protection must conform to industry requirements, including the addition of grounding apparatus if necessary for MV systems.
- For faults within the microgrid, the affected area must be isolated from the rest of the microgrid before the entire microgrid is disbanded, requiring facilities or equipment within the affected area to revert to standard building backup.
- For faults within a building, the building shall disconnect from the microgrid before other (unfaulted) buildings, facilities or equipment assumes that the fault is in the MV network.
- Faults within generators and other equipment shall result in their disconnection before other protection is activated in either the LV or MV network.
- Coordination studies shall be conducted and implemented for both microgrid and grid connected conditions.
- Protection schemes during grid connected and microgrid mode shall be implemented to account for difference in power flow directions, distance calculations, and pilot schemes.

The Consultant shall evaluate the following potential upgrades that may be required to provide a microgrid connection to NJ TRANSIT M&E Line and light-rail traction power facilities. Following consultation with NJ TRANSIT, the Consultant shall advance all design elements for the agreed upon upgrades selected from the list below:

- Install a 230 kV switching substation at the generation site. This substation would be a 6-position breaker-and-a-half scheme.
- Install a double-circuit 230 kV overhead transmission line between the generation site and the Mason 230 kV substation.
- Expand the Mason 230 kV substation to accommodate two new 230 kV feeders.
- Build a new 230 kV/13 kV station at the generator site to originate new 13 kV microgrid feeders.
- Install new 13 kV circuits originating at the central generating station running east and west to the Hoboken Station to provide a microgrid connection for the HBLR and other NJ TRANSIT loads in the area.
- Reconfigure existing NJ TRANSIT's West End and Henderson 13 kV substations to accommodate an additional feeder from the traction power microgrid.
- Develop a new 13 kV substation or expand an existing substation in the Hoboken Yard to terminate microgrid feeders for HBLR traction, and originate new feeders to be laid along rails.
- Install one or two new 13 kV feeders along the HBLR right of way to provide a microgrid connection for the existing traction facilities, reconfigure the station for an additional feeder.
- Reconfigure existing traction rectifier 13 kV service for a new 13 kV connection to the microgrid.
- Install appropriate switching, control, and protection scheme at all substations.

Supplying traction power to the M&E Line from the 230 kV side of NJ TRANSIT's Mason substation takes full advantage of the significant degree of redundancy and excess

capacity that exists at that substation. This configuration also provides a redundant generation supply to NJ TRANSIT's MMC which is also served from the 230 kV bus.

The Consultant shall evaluate the following potential upgrades that may be required to provide a microgrid connection to the Northeast Corridor Project Service Area by a microgrid connection to the Northeast Corridor traction power facilities consisting of the additions or upgrades listed below. Following consultation with NJ TRANSIT, the Consultant shall advance all design elements for the agreed upon upgrades:

- Build a new static 50 MW frequency converter facility (2 - 25 MW units) at the generation site to supply 138 kV 25 Hz single phase traction power.
- Build a new 4-position 138 kV 25 Hz substation at the generation site to connect the frequency converter and terminate two of Amtrak's 138 kV traction circuits.
- Develop a new 6-position 138 kV substation near Amtrak Substation 41 to cut into the existing 138 kV traction circuits.
- Build two new 138 kV 25 Hz single-phase overhead circuits along NJ TRANSIT right of way connecting the new 138 kV substation at the generation site to the new 138 kV substation (S42) near Amtrak substation S41.
- Develop a redundant 13 kV connection to Amtrak's Weehawken station connected to the new HBLR 13 kV microgrid feeders.
- Install appropriate switching, control and protection scheme at all substations connected to the microgrid to allow for reliable operations during islanded mode.

With respect to traction power, these upgrades would enable trains on the NEC to operate from New York Penn Station to potentially beyond Newark Liberty International Airport.

A detailed study shall be conducted to ensure that the new frequency converters are able to feed traction power at the proposed location without voltage or thermal constraints on the existing 138 kV 25 Hz system. In addition to traction power, supply to other critical loads is required to enable full rail service on the NEC.

- All design for traction power systems shall be in accordance with Amtrak's specification AED-1 and standard drawings where applicable, i.e. NEC Amtrak property. NJ TRANSIT ET standards shall apply if proposed design/structures are located solely on NJ TRANSIT property. The consultant shall develop traction power drawings and details including traction power feeders. Develop Catenary wiring plans including but not limited to: wire runs; attachment details; clearance details; and revised Power Plate drawings.

- The design for the modifications and upgrades of the existing traction power substations may also be required to support the expansion of the catenary system as well as interconnection with the new Microgrid power system. It is assumed that the existing substations contain adequate power reserves from the utility suppliers and Amtrak's frequency converter infrastructure or NJ TRANSIT infrastructure as appropriate and for normal operations. The design of substation equipment layout shall accurately portray the spatial and accessibility requirements along with the necessary associated civil/structural design requirements within the substation.
- Relocations of electric traction and signal system facilities, if required, shall be completed and functional before the existing facilities can be taken out of service. The consultant is required to develop detailed construction phasing and cutover plans for replacement and/or modifications of these existing systems. The development of the catenary design modifications if any, must include sectionalizing.

- Provide interfacing, coordination and integration of the new systems with existing systems along the Northeast Corridor and NJ TRANSIT M&E Line and light-rail traction power facilities.

- The consultant shall obtain approval of Electric Traction design from NJ TRANSIT and Amtrak as necessary.

Deliverables:

Electric Traction Power Facilities and Power Management Design 10% and 20% - Draft and Final

Subtask 2.2.2.1 – Amtrak Electric Traction Power/Overhead Catenary System Substation 41 (Kearny Substation)

Amtrak's Substation 41, a major electrical substation in Kearny, NJ, was heavily damaged during Hurricane Sandy in October 2012. The substation supplies power to the North River Tunnels and New York's Penn Station. While service has been restored, a complete reconstruction of Substation 41 and full decommissioning of the existing substation has been proposed. The purpose of the proposed Substation 41 reconstruction is two-fold: (1) to rebuild the substation at a higher elevation, thereby reducing flood vulnerability; and (2) to create a larger platform, thereby allowing additional electrical capacity to support future NEC Improvements.

This Scope of Work is for the Conceptual and Preliminary (20%) design of a Traction Power Substation to replace Amtrak's existing Substation 41. The existing substation is subject to high water during unusually powerful storms due to its location in a marsh adjacent to the railroad Right-of-Way.

The Scope also includes the rerouting or redirecting of four (4) Traction Power transmission circuits presently on lattice towers located in the marsh which feed the existing Substation 41.

The rerouting options of the existing four (4) Traction Power 138 kV Transmission Circuits (#140, 240, 340, and 440) shall be dependent upon the new substation location. One planned cost effective option, however, would be to utilize the new monopoles being designed for the "Passaic River Transmission Crossing" Project and relocate the 138kV directly into the proposed substation and retire the existing lattice towers located in the marsh (Tower 'C' and Tower 'D'). These new monopoles (TP-889A and TP-889B) are proposed to be located adjacent to the north bank of the Passaic River, in close proximity to the existing A-frame Tower B-889 that is to be retired. The existing transmission circuits emanating from the north side of existing Substation 41 (#141,

241, 341, and 441), would be extend/interconnected with the exiting circuit heading east toward Substation 42.

The new Kearny Substation shall contain all equipment necessary for railroad operations which are currently provided by the existing substation.

The Substation design must accommodate four 4.5 MVA Traction Power Transformers fed from four (4) existing 138 kV, 25 Hz Traction power transmission lines and all necessary switchgear, twelve (12) trolley feeder breakers with necessary bus breakers, two 60Hz to 96-2/3 Hz Signal Power Motor-Generator sets and associated switchgear, all necessary relay and control apparatus, auxiliary equipment and a control building with a separate battery room for a 130 VDC control battery. The control building must be large enough to house the Relay and Control boards for the138 kV switchgear, the 12 kV switchgear and the two Signal Power M.G. Sets switchgear.

The Substation design shall adhere to Amtrak standards as outlined in Amtrak Specification C.E. 501(a), Outline Specifications for Electrification Power Supply, Substations and Control Systems; and Specification AED-2, Structure Loading, Design Criteria, and Standards, as well as all applicable Industry Standards.

The design shall be progressed in accordance with Amtrak's AED-1 except as modified by this Scope of Work. For the **Conceptual Design** phase the Consultant shall conduct field investigations with NJ TRANSIT / Amtrak Engineering personnel to determine possible options. The options shall be presented to NJT/Amtrak as Conceptual Designs along with a **FEASIBILITY REPORT** of each option and an "order of magnitude" **CONSTRUCTION COST ESTIMATE** for each.

The Conceptual Designs shall also include the following:

1. Location Plan
2. Site Layout

3. Equipment arrangement
4. Access Plan
5. 138 kV Transmission Routing
6. Single Line 138 kV, 6.9 kV and 12 kV Diagrams
7. Material List of Major Equipment
8. Conceptual Structural Plans
9. Conceptual Civil/Site Plans
10. Narrative of Impacts to Existing Portal Bridge Capacity Enhancement Project (PBCEP) Designs
11. Outline Specifications

Prior to the start of any work, the Consultant shall submit a design schedule to NJ TRANSIT for review and acceptance. Once the “best” option is decided upon, NJ TRANSIT shall direct the Consultant to progress the Conceptual Design to the 20% (Preliminary) Design Level. The Consultant shall not proceed with the Preliminary (20%) Phase of this project until directed to do so NJ TRANSIT.
The Preliminary (20%) Design Phase shall include:

1. Site Preparation, and Layout – the Consultant shall complete necessary field assessment. The Consultant shall develop plans and specifications that are 20% complete for the preparation of the site(s) including modifications to existing transmission facilities.

2. Site Plans – the Consultant shall prepare and submit 20% site plans and specifications.

3. Electrical Systems – the Consultant shall prepare and submit 20% plans and specifications and perform all calculations for the Electrical Work, including but not limited to the following:
   a. Location Plan
   b. Wiring Plans (Single Line Diagram, Main Wiring Diagram)

c. Wire, Cable and Conduit Runs
d. Relay and Control Schematics
e. Cable List
f. Electrical Details
g. Equipment Layouts
h. Hardware
i. Bill of Material

4. Structural – the Consultant shall prepare and submit 20% plans and specifications and perform all calculations for any Structural design necessary. A separate Structure Package shall include the following:
   a. Equipment Mounting Details
   b. Structural Support Modifications
   c. Steel Details
   d. Structure, and Foundation Repairs as Required
   e. Bill of Material

5. Technical Specification – Technical Specifications shall be prepared to the 20% level in CSI format for construction tasks performed by a contractor and for all special and non-Amtrak-standard Equipment and Material.

6. Construction Cost Estimate and Schedule – the Consultant shall prepare an “order of magnitude” construction cost estimate at the 20% level of design.

7. Administration – the Consultant shall provide administrative Project Management as outlined in this RFP.

The coordinated design schedule shall assume Amtrak shall require 21 calendar days from the date of receipt of each design submittal (Conceptual and 20%) for review and comments.

The relocation of the Kearny Substation shall require the construction of a new fill pad to support the new substation. It is anticipated the substation shall be relocated onto Amtrak property located directly west of the existing substation, within the Cedar Creek Marsh South. This new fill area will need a final ground surface elevation extending above the anticipated 500-year flood elevation, with an adequate freeboard allowance. It is anticipated that the existing grade will need to be raised to the 500-year storm flood elevation of 15 feet to accomplish this goal.

Due to the presence of the highly compressible meadow mat and glaciolacustrine varved clay layers in this area, long-term settlement of any fill solution shall be a major concern. Global stability of the new fill pad shall also be a concern, particularly during and shortly after the construction of the fill. Effects of the new fill on the existing railroad embankment and tracks, as well as existing nearby transmission structures, shall also be a concern.

The geotechnical conceptual effort shall include the collection and review of pre-existing geotechnical test boring and laboratory data from the Portal Bridge project that is close to the Kearny Substation project area. Additional borings and laboratory testing shall be needed as a part of future design efforts.

An alternatives analysis shall be performed comparing two different fill pad options. One option would be to construct the fill pad using traditional compacted embankment or structure fill materials, either with or without surcharging. A second option would be to construct the fill pad using lightweight fill materials, most likely in combination with a perimeter retaining wall to limit the footprint of the new fill that shall be required. Settlement and stability characteristics of the two alternatives shall be evaluated, as well as a conceptual-level comparison of construction costs. The alternatives analysis shall also consider regulatory compliance implications for presented options. In addition, the Consultant shall assist and support NJ TRANSIT in satisfaction of regulatory compliance permitting and related efforts.

A conceptual geotechnical recommendations report shall be prepared summarizing the existing data available, the results of the alternatives analysis, and preliminary recommendations regarding the preferred fill alternative.

Deliverables:
20% Preliminary Design Package as outlined above.

Subtask 2.2.3 - Civil, Structural, Geotechnical and Hydraulic

a. Perform the required preliminary Civil, Structural, Geotechnical and Hydraulic design calculations necessary for construction. Compare and analyze alternative foundation design and construction methods.
b. Prepare preliminary design plans and typical preliminary details for the required structures. Show horizontal and vertical control lengths and widths of structures, typical foundation design and construction staging. Specify design criteria to be used.

The civil drawings shall graphically depict the proposed Power Plant and all associated generation, distribution and transmission equipment in support of electric traction requirements and ACOE and NJDEP Land Use regulatory limits of disturbance for the selected Project site. Demolition of structures and utilities to be relocated shall also be identified as applicable. The structural drawings shall depict the type of structures necessary, and the size and type of foundations to be proposed. The geotechnical design shall include a report and foundation recommendations. Foundation design shall be based upon geotechnical data obtained from existing data and by the borings taken for this project under the engineering task. A geotechnical investigation shall be conducted to support the preliminary design and contract packaging tasks. A construction-staging plan shall describe the methods and sequence of construction to complete the project along with detailed description of construction windows so as to maintain uninterrupted rail passenger service and adjacent commercial operations as

applicable. The hydraulic design shall include the delineation of the drainage patterns for the Power Plant and associated appurtenances as well as modifications to related electrical power distribution and transmission infrastructure including but not limited to transformer substations along with transmission cycle frequency converters. The location of drainage features shall be defined and sized. Drainage requirements in floodplains and wetland areas shall be defined. A report describing the entire drainage program for the project shall be prepared discussing the impacts and requirements of NJDEP, USACOE and USEPA.

It is the Consultant's responsibility to ensure that all plans and drawings developed for this Project shall comply with project permit conditions and associated regulatory compliance requirements as developed by NJ TRANSIT under separate Contract. Upon the direction by NJ TRANSIT, the Consultant shall be prepared to demonstrate said compliance to all Federal and State regulatory agencies, NJ TRANSIT and/or Amtrak.

Design considerations. The extent and nature of the operational air pollution impacts from power plant operations shall be analyzed prior to specifying the environmental control systems for the Plant. The system shall meet all applicable requirements, and the application shall be the most economically feasible method of accomplishment. All alternative solutions addressing compliance shall be considered which shall satisfy the given load and which will produce the least objectionable wastes. Plant design shall be such as to accommodate future additions or modifications at minimum cost.

Deliverables:

- Reports as detailed above.
- 10% Plans and Specifications and in conformance with Project General Plan and Specification Requirements as well as General Notes as detailed in Task 2 – Engineering above.
- 20% Plans and Specifications and in conformance with Project General Plan and

Specification Requirements as well as General Notes as detailed in Task 2 – Engineering above.

Subtask 2.2.4 - Subsurface Investigations

NJ TRANSIT views this component as critical to the Project's success. The Consultant shall ensure that uncertainty relative to Project Subsurface conditions shall be minimized to the extent practicable by the application of a subsurface investigation effort. Prepare boring plans including Railroad flagging requirements (where necessary), subject to NJ TRANSIT and Amtrak approvals, for a Soil Engineer's use in order to take borings and provide diagrammatic sketches for foundation explorations and test pits for subsurface, Power Plant design, associated distribution and transmission infrastructure, natural gas supply connections, related remote substations and service road design data. When required, prepare Site Specific Work Plans (SSWP) for Amtrak and NJ TRANSIT review and approval. The report shall include a proposed schedule that shall allow work to continue without impact to daily rail passenger service as applicable.

The plan shall identify the locations at which additional subsurface information is required in order to ascertain the bedrock profile and quality of subsoils. The Consultant shall conduct the investigation and document the data and findings in a geotechnical report, providing an appropriate level of analysis as required to support final design, temporary support and underpinning design and to determine constructability implications for all facilities and systems associated with the Project.

a. An outline of the Geotechnical Investigation and a Soil Borings Plan shall be submitted to NJ TRANSIT for approval, prior to the initiation of the detailed investigation. The Consultant shall arrange for the services of an Archeological Sub-consultant acceptable to NJ TRANSIT to provide field support during this phase and in concert with the findings of any previously developed Section 1(A) Report of Archeological Resources and Effects. In the event that such a report is not available,

the Consultant shall develop necessary Federal and State compliance documentation as required. All test boring samples shall be inspected by the Archeological Subconsultant, to determine the possible existence of archeologically significant artifacts. The Archeological Sub-consultant shall prepare and submit all necessary documentation in compliance with applicable requirements set forth by the New Jersey State Historic Preservation Office and in compliance with Federal Section 106 guidelines.

b. The Consultant shall designate and stake out all necessary boring locations prior to initiation of field activities as well as notify NJ TRANSIT when said task is complete in order to facilitate NJ TRANSIT review. The Consultant shall not rely solely on historic or archived soils data to formulate necessary documentation. This effort shall require accumulation of field data and subsequent reporting as detailed herein.
c. Perform necessary foundation borings and field and laboratory soil tests.
d. Coordinate and inspect any boring operations and test pit excavations.
e. Analyze all data obtained by borings and laboratory tests and prepare a soils report with recommendations for approval by NJ TRANSIT.
f. Identify temporary or permanent sheet piling and dewatering measures for construction of structures.

Deliverables:

- Geotechnical Investigation Plan and Boring Program
- Boring Plan and Profiles
- Geotechnical Report, with boring logs and analysis for each geologically discrete project element.
- Section 1(A) Report of Archeological Resources and Effects as necessary.

Subtask 2.2.5 – Topographical Survey Reference NJDOT Survey Standards

The Consultant shall conduct a topographic survey of the proposed Project footprint at scales of 1" = 40' horizontal and 1" = 2' vertical. The base sheets shall show the project

coordinate grid system, datum references, all existing surface features and the existing utilities as verified by NJ TRANSIT and through field observation. The Plant location (footprint), including related site appurtenances, utility and drainage work, shall be shown on reproductions of the base sheets for the 100% of the 20% PE design level. The surveys shall include, but not be limited to:

- Horizontal datum (NAD 83) control in the New Jersey and Pennsylvania Plane Coordinate System.
- Contours at 1' intervals and key spot elevations to accuracy of 1/10 of a foot.
- Existing above and below utilities, from NJ TRANSIT, Amtrak and Utility records.
- Site topography including buildings, structures, drainage channels and any other features.
- Conditions of soils and pavement, including evidence of hazardous waste with the support of a qualified Environmental Inspector as provided by NJ TRANSIT under a separate contract. Conditions of soils shall be determined through borings or test pits.
- Property lines, easement lines, railroad and street rights-of-way and any property encumbrances on or adjacent to the site.

Any drawings or data obtained from NJ TRANSIT shall require verification in the field.

General Notes Regarding Topographical Surveys:

- The proposed Plant location shall have an approximately 20 – acre footprint available. All surveying activities for the Project as prescribed by the Task shall need to be coordinated with Tasks 4 (Environmental Analysis), 5.0 (Required State and Federal Permits) and Task 6 (NJDEP Site Remediation Compliance), with regards to Data Collection and Mapping.
- Photogrammetry: The Consultant shall secure, review and analyze existing survey data and topographic mapping previously prepared for nearby projects either sponsored by NJ TRANSIT, adjacent property development or Amtrak.

The topographic mapping shall be field edited, and necessary changes drafted.

- The Project shall be surveyed under the New Jersey State Plane Coordinate System, NAD83. The Vertical Datum reference shall be to the NGVD29 system. Monumented baselines within the project limit area shall be recovered and missing monuments re-established.
- Location of Borings, Test Pits and Probes: Borings required for the subsurface investigation tasks shall be staked-out in relation to the established baseline monumentation and plotted on prepared boring location plans. Elevations and coordinates shall be established within the project datum for each boring location.
- Location of Utilities and Adjacent Structures: Utility companies having facilities in the project area shall be contacted to provide plans of their facilities that may be affected by the proposed design. Included shall be sewer, water, electric, gas, telephone, data transmission and cable television. Upon receipt of the available plans, a survey field edit shall be performed to verify all subsurface utilities within the right-of-way limits. Inverts of sanitary and storm sewer pipes at manholes, catch basins and outfalls, and top of grate elevations shall be obtained for the affected facilities where accessible by survey equipment. Further details regarding these requirements are provided in Subtask 2.2.6.

- A composite utility plan shall be compiled, incorporating the plans obtained from the utilities and field survey notes. From this, the Consultant shall identify facilities in conflict with the proposed design.
- Field surveys shall be conducted as required to provide the additional information needed to perform the design, such as critical clearance dimensions to adjacent development, property boundaries, environmental control features, etc.
- Field surveys shall utilize the existing horizontal and vertical control established for the original mapping. New monumentation shall be established, as required, to facilitate construction.
- Topography: Fills or cuts due to construction or other activities after the original topographic maps were prepared, shall also be field edited. New contours (at 1'

intervals) and elevations shall be drawn on the topographic maps.

- The photogrammetric mapping shall be prepared in a scale of 1" = 40' with field survey details needed for the existing structures/buildings, existing electric power distribution and transmission facilities, adjacent rail structures including bridges, rail station(s) and signal and communication system components located in or near the Project Area. It shall include:

  i. A survey of all structures to verify location and size of all poles, towers, foundations, elevations from top of rail, top of road or structural details.
  ii. Detailed surveys of existing buildings, bridges, retaining walls and other structures within the project area.
  iii. Drainage structures, utilities, streets, roads, tree masses, etc.

- Existing plans obtained from others may show structures referenced to a different vertical datum than the project vertical datum. Survey work shall be performed to relate all established vertical datum to the project datum. For preliminary design purposes, the azimuth and bearing of each roadway and track within the project limits shall be obtained.

- Preparation of Cross-Sections: Where agreed upon by NJ TRANSIT, Cross-sections of the Project area at 50' intervals shall be developed through photogrammetric methods and field survey verification.

- Digitized Data: To convert the field surveys, as well as the topographic mapping in digitized format, the Consultant shall import all survey data by file transfer directly to electronic drawings. The data shall be translated to a computerized system for convenient use with CADD systems used by NJ TRANSIT or Amtrak.

Deliverables:

- Topographical Survey as detailed above.
- Topographic Survey (Supplement to NJ TRANSIT's baseline mapping as necessary).

Subtask 2.2.6 – Utility Engineering

Utility Engineering is also a vital component of the preliminary engineering and production of 20% construction plans. Using already available Project data as a starting point, the Consultant shall identify all existing and proposed utilities within and immediately adjacent to the site including but not limited to the aerial, surface and subsurface PSE&G power lines and Commercially owned natural gas transmission pipelines in the Project area. The Consultant shall identify the locations of possible utility impacts or conflicts resulting from the project and determine the required improvement. The Consultant shall locate all types and sizes of utilities, including mains, high pressure lines, aerial transmission lines, fiber optic banks, etc. and prepare both existing utility and utility relocation drawings.

Where agreed upon by NJ TRANSIT, the Consultant shall conduct Subsurface Utility Engineering (SUE) for determination of the location of underground utilities. The Consultant shall prepare a SUE Plan, comprising of Test Pit Plans identifying where test pits are needed, a description of what equipment and methods shall be used, method of repair to existing properties, and a plan for coordinating with municipal and state requirements during the investigations. Innovative and non-destructive methods for the preliminary location of utilities shall also be considered.

The utility drawings shall include all facilities such as duct banks, vaults, manholes, telephone poles, utility poles, hydrants, and other relevant structures or facilities that may be potentially impacted by Project Construction. The Consultant shall determine the utility owners' horizontal and vertical controls, and convert the survey the data to comply with the project standards. The Consultant shall catalog data collected, and

maintain file copies of source documents, such as deeds, licenses, plots, easements, or other documents used to locate utilities.

Utilities shall also be located on the base mapping.

Upon NJ TRANSIT direction, the Consultant shall meet with utility owners and associated regulatory agencies to ascertain the requirements for permanent utility relocations, as well as for temporary supports and work-around as required during construction. The Consultant shall support NJ TRANSIT in developing Utility Agreements based on these discussions.

The Consultant shall also develop utility cost estimates for all temporary and permanent work, including providing support during construction. The format of the Cost Estimate reports shall be consistent with NJ TRANSIT's Superstorm Sandy Recovery and Resilience Program requirements. Such requirements shall be available subsequent to Contract award.

The Consultant shall develop the drawings in compliance with rules of the appropriate regulatory authority.

The Consultant shall evaluate and provide for electrical, water, natural gas supply, sewerage and other utilities needed to support construction operations in the preliminary design. The Consultant shall incorporate these services into the utility cost estimates and agreements.

General notes regarding Utilities and Coordination:

- During development of the preliminary design documents for utility work, liaison shall be maintained with agencies and utility companies whose facilities maybe impacted by this Project. Available utility plans, records, reports and surveys shall be initially reviewed and shall be followed by a site inspection to:

i. confirm the specific existing utilities in the field;
ii. assess the condition of such utilities;
iii. determine the impact of design on such utilities; and
iv. determine the impact of construction on such utilities.

- The location, type, and size of the systems operated by the respective utilities shall be identified. Affected utility owners shall be contacted by NJ TRANSIT to discuss general policies concerning the operation, protection, support, relocation, and reconstruction of the facility.

- The utility facilities can be relocated as necessary, subject to approval by the appropriate utility and NJ TRANSIT. Coordination meetings shall be scheduled to obtain utility input during the early stages of the design, at which time comments shall be considered for use during the development of the preliminary design documents.

- The Consultant shall establish, using the standards and practices of utility owners, the design criteria for utilities that shall be used as a basis for the preparation of construction phase documents. The standards shall be developed using current NJ TRANSIT/Amtrak/utility standards as a base, with modifications to be made where necessary to accommodate the special needs of this Project. Proposed modifications or additions to existing design standards shall be identified and submitted to NJ TRANSIT/Amtrak/Utilities as applicable for their approval prior to use to support design preparation.

- Preliminary design documents for utility relocation shall be prepared in accordance with applicable regional, county or municipal, and utility company's applicable rules and regulations. The Consultant shall prepare the necessary sketches, plans, and agreements, along with descriptions of work, to accompany utility permit applications. The Consultant shall also be available to assist NJ TRANSIT and the Utilities in preparing agreements for the correction of utility-

related problems with the respective utility owners, if required.

- The Consultant shall provide necessary documents and applications required to permit rearrangement of utilities and/or secure easements. Standard procedures for submission of modifications, changes or relocations shall be noted in the construction contract documents.

Deliverables:

- Subsurface Utility Engineering Plan
- Existing Utility Drawings
- Proposed Utility Relocation Drawings
- Utility Cost Estimates
- Utility Agreements – drafts and final for reimbursement of engineering cost.
- Utility Catalog and Files
- Draft and Final Physical Facilities 20% Construction Plans as detailed above.

Subtask 2.2.7 - Structures

- This task encompasses the establishment of design criteria and standards for structural elements of the Project in accordance with Power Plant Engineering and design standards as set forth above and as applicable, as well as NJ TRANSIT and Amtrak standards and specifications as applicable. These standards, in addition to the normal structural design standards of AREMA, AASHTO, NJDOT, ACI and AISC, where applicable, shall also contain criteria to meet specific requirements of applicable railroad and roadway design standards. Where conflicts occur in the railroad design criteria and standards, NJ TRANSIT and Amtrak will provide guidance as necessary. These criteria and standards shall be the basis for developing preliminary structural schemes, construction staging procedures and preliminary drawings in sufficient detail so as to identify the structural requirements of the Project.
- The major structural requirements for this Project shall be imposed by the layout

and operational schemes of the proposed Project Power Plant footprint and new alignments for power transmission and distribution. Alternate structural systems, elements, and components shall be evaluated considering various substructure and superstructure systems to achieve low maintenance, aesthetic, practical and cost-effective structures.

- The evaluation of candidate structures shall be an iterative process. Constructability, in light of operational and environmental constraints, shall be considered for all alternatives. Maintenance criteria shall be included in the evaluation.
- The structural effort under this task shall include the preliminary design and layout of the new structures and facilities. Additional factors of ROW limitation, impact on abutting properties and facilities, constructability, maintenance, and cost shall be considered for structural alternatives.
- Preliminary designs and plans for structural elements required for the Project shall be prepared in sufficient detail to evaluate and assess the alternatives to be considered. Preliminary plans to be developed under this task shall include, but not be limited to:

    i. Foundation, building and superstructure plans
    ii. Culverts
    iii. Retaining walls
    iv. Structural modifications to existing facilities

Major requirements of this task shall include preparing cost estimates for the primary designs, alternatives and sub-options to be developed by the Consultant for comparison of cost effectiveness, and determination of funding implications. As noted previously, cost estimates shall be prepared consistent with NJTRANSIT's Superstorm Sandy Recovery and Resilience Program requirements. Such requirements shall be available subsequent to Contract award.

- The results of this work effort along with recommendations for final

implementation shall be presented to NJ TRANSIT for approval and selection of the preferred concept. All alternative concept studies and their comparative cost, constructability, performance and maintenance shall be presented. Recommendations shall be fully supported and documented in the Draft Preliminary Design/Project Definition Report.

- Detailed quantities shall be checked, compiled and indexed for future reference. Technical and procurement specifications, required as a result of the design process, shall be identified for future inclusion into the final contract documents.

Subtask 2.2.8 - Communications Systems and Power Management Communications

The Consultant shall establish design criteria for the Communications Systems to be compatible with NJ TRANSIT and Amtrak systems. Proposed systems shall specify the communication infrastructure that is required to maintain normal and emergency radio and land based communications, emergency evacuation systems, communication systems necessary for functional interface with the new Power Plant to Railroad operations and interconnection with the Railroad electric power transmission network as well as connection with the area commercial power grid, etc.

- The characteristics of communications facilities, particularly on the Northeast Corridor, shall be analyzed to determine whether the Project shall result in damage to or interference with the existing communications system.
- The existing Northeast Corridor rail line communications facilities shall be evaluated to determine if construction activities or other factors shall result in any degradation of the existing communication systems. If it is determined that problems could occur, the Consultant shall recommend necessary mitigation measures.

The control architecture for the NJ TransitGrid is essential to the stability and efficiency of its operation. A dedicated communication network shall be required for monitoring and data exchange. Optimal operation shall require controllers on energy resources that

shall likely replace or interface with OEM controls.

Microgrid Communication Network

- Network connectivity shall be provided to all microgrid monitored assets, controlled assets, and the primary and secondary control and monitoring centers.
- Network communications must satisfy low latency requirements for control and provide a highly reliable information channel that retains the integrity of data.
- Control system network must, at minimum, meet industry standard best practices for cyber security (reference cyber security section).
- Network architecture and communication protocols must have point-to-point and broadcast capabilities.
- All communications must support interoperability between all distributed devices using published object functions, standard commands, and standard protocols.
- Communications must be adequately extensible to accommodate future additions/modifications.
- Interoperability requirements must also be satisfied for all interconnection control and monitoring systems from NJT, Amtrak, and local utilities.
- Network and communication device time synchronization shall be implemented between all transacting parties within a reasonable degree of accuracy.
- Fiber optic communications shall be implemented for the bulk of the microgrid communications.
- Rather than simple logical isolation, all microgrid control system network communication shall be physically isolated from all other networks (as opposed to VLAN separation).
- Provisions for remote access shall be provided for troubleshooting, remote maintenance, and software updates.
- Controlled communication channels shall be established for data transfer between the microgrid network and all rail and utility partners, including PSE&G, PJM, NJ TRANSIT operation centers, and Amtrak operation centers.

- Network architecture shall be hardened with redundant communication paths, uninterruptible power supplies, critical spares, and environmental controls.
- Critical network equipment shall be located above the DBT flood level and have adequate physical protection from tampering and unauthorized access.

Energy Management System/SCADA

- An EMS and SCADA system shall be installed for the NJ TransitGrid separate of any existing information systems or rail operation systems currently in place.
- The EMS and SCADA system shall have an HMI to facilitate monitoring and man-in-the-loop control.
- Full backups of the EMS and SCADA systems shall exist in a geographically diverse location and located above the DBT flood level.
- EMS and SCADA systems shall monitor all critical parameters of the microgrid to manage frequency, voltage, energy/power production, load shedding, microgrid activation, generation asset optimization, and synchronization in accordance with ANSI/NEMA C84.1-2006 and IEEE 1547 standards.
- The EMS shall provide manual and automated start capabilities, including black start.
- EMS and SCADA shall provide automated and manual plant control capabilities of assets at the central power plant based on market data and market requirements.
- Control profiles based on current market structures and data shall be created to provide appropriate control to safely meet market obligations.
- Provisions for manual microgrid switchover (for testing or preventative measure purposes) shall be included to disconnect from utility during normal operations.
- Hierarchical controls shall be implemented so that the EMS can manage real and reactive power in a holistic fashion, maintain adequate reserve margins, and properly respond to load fluctuations.
- All parameters and measurements shall be archived using data historian functionality.

- Data historians shall be complete with data filters based on time and value rate of change, configurable sampling rates, and shall either save all historical data in provisions for long term storage or have a round robin database with sufficient storage.
- Data acquisition equipment shall contain set, get, forced, and unforced capabilities.
- All EMS/SCADA field equipment shall be protected by environmentally hardened enclosures to protect against the elements, tampering and DBT conditions.
- The SCADA system shall extend to all isolated facilities for monitoring purposes and at minimum shall monitor generator real/reactive power output, building voltage and current draw, fuel levels, and state of renewable energy output (if any).
- Continuous, 24/7 monitoring shall be conducted by qualified operations personnel.
- A paging system shall be put in place to provide monitoring and alert capabilities via a paging system so operations and maintenance personnel can quickly respond to failures or potential problems.
- Remote access to the EMS/SCADA shall permit remote monitoring, diagnosis, troubleshooting, software/firmware updating and limited control during normal and emergency conditions.
- Remote access functionality must satisfy cyber security best practices and recommendations (reference cyber security section).
- Persistent remote access connections shall not be permitted and physically disconnected when not in use.
- Remote connections shall be controlled with connection timeouts and strong encryption and authentication methods.

Preliminary design plans, specifications and cost estimates shall be prepared for the necessary modifications to communications facilities affected by this project. Cable routing, communications, bungalow layouts, and typical details shall be shown. The

work shall be performed in accordance with applicable Federal and State requirements, PJM and PSE&G requirements as well as NJ TRANSIT standards and Amtrak standards as applicable and subject to review and approval by all agencies as applicable. Installation instructions and plans for the communication system configuration shall be provided.

Deliverables:

Performance Specification for Communications Backbone Power Management Infrastructure, Radio Systems, Emergency Alarm Stations, Fire Alarm Systems – draft and final.

Subtask 2.2.9 - Signals/Train Control Architecture

The Consultant shall define and design modifications as necessary to the Project Area Signaling/ Train Control system to support train operations when the proposed microgrid interface is active and supplying traction power to the Project Area under an islanded scenario. Operations, operating headway and throughput performance for these alignments shall be considered. All work on Amtrak ROW shall conform to Amtrak signal design standards. All detailed final design on NJ TRANSIT ROW shall be approved by NJ TRANSIT. All temporary circuits and work necessary for construction staging or temporary operations shall be identified. The system considered shall include the following alignment components:

- Interface with Amtrak's existing NEC and NJ TRANSIT's M&E line in and approaches in the defined Project Area;
- New interconnections with the HBLR.

The Signaling/ Train Control System Definition shall consider and evaluate (as a minimum) the following:

- Concept of operations during microgrid operation in the absence of available normal traction power supply over the proposed alignment to meet service requirements;
- Signaling design criteria, infrastructure interfaces and assumptions;
- System architecture and philosophy for train control outlining levels of control, locations of control, jurisdiction of various agencies;
- Integration of new train control technology with existing signaling systems, and vehicle fleets for approaching continuity of seamless operations;
- Overview of the Wayside, Car-borne and Supervisory train control subsystems as applicable;
- Safety assurance and approach to hazard mitigation for all new subsystems and interfaces;
- System Availability and Maintainability approaches.

The Consultant shall also evaluate the cost and schedule associated with procurement and implementation of the proposed system.

In performing this task, the Consultant shall use the existing track alignment scheme and profiles as well as the existing necessary equated distances for safe braking. These equated distances plus the maximum speed allowances and speed restrictions shall be used to modify as necessary, applicable current Road Diagram and Aspect Charts to integrate microgrid electric power distribution and transmission. The key components of the modified signal system shall be:

i. Road Diagram: showing the physical location of signals, switches, track circuits and signal equipment requiring modification or addition;
ii. Aspect Chart: showing signal locations and aspects for all movements on the NEC taking into account all Project related additions and modifications as necessary.
iii. Cost Estimate: once all the changes to the existing signaling system have been identified, cost estimates shall be developed. As noted previously, cost estimates

shall be prepared consistent with NJTRANSIT's Superstorm Sandy Recovery and Resilience Program requirements. Such requirements shall be available subsequent to Contract award.

The Consultant shall provide deliverables during the PE phase at approximately the 10% and 20% level of completion. Each submission shall include the appropriate level of detail at each percentage of completion for drawings, specifications, and cost estimates. Elements of the completed signal design accounting for Project related modifications (if identified) would include the following as applicable:

i. Signal apparatus and block layout modifications if any;
ii. Track circuit design modifications if any;
iii. Line circuit design modifications if any;
iv. Interlocking(s) modifications if any;
v. Traffic control system modifications if any;
vi. Cab signal cut-in and cut-out facilities modifications if any;
vii. Cab signal test facilities modifications if any;
viii. Switch Control Logic modifications if any;
ix. Signal power requirements modifications if any.

Designs shall be provided for all of the necessary "tie-in" circuit modifications. Project related modifications to Interlocking design shall include, as a minimum, the following items:

i. Track circuits modifications if any;
ii. Cable routing plan modifications if any;
iii. Positive Train Stop modifications if any;
iv. Cab signal circuits modifications if any;
v. Line circuits modifications if any;
vi. Route check and locking circuits modifications if any;

vii. Home signal circuits modifications if any;
viii. Vital Processor Interlocking modifications if any;
ix. Time Locking circuits modifications if any;
x. Code change circuits modifications if any;
xi. Traffic control circuits modifications if any;
xii. Color light signal circuits modifications if any;
xiii. Electric switch machine circuits modifications if any;
xiv. CIH event recorders modifications if any;
xv. Power distribution circuits modifications if any;
xvi. Snow melter circuits modifications if any.
xvii. Track blocking circuits.
xviii. Alarm circuits.
xix. Code system interface and circuits for the office and field locations.
xx. Local Control Panel layout.

The preliminary design for microgrid operations necessitating modifications of the signal facilities shall be developed into construction contract documents. This work shall include providing pre-wired cases and bungalows by a signal manufacturer and installation of all signal and communication's equipment by a general contractor. Contract documents shall include drawings, specifications, required construction staging, and the engineer's estimate.

Deliverables:

- Modified Signaling/ Train Control System Definition - draft and final.
- Preliminary Engineering Cost Estimate for Signaling / Train Control Procurement and Modifications - draft and final.
- Proposed Schedule for Procurement, Implementation of Signaling/ Train Control System – draft and final.
- Reports, diagrams, drawings as detailed above.

Subtask 2.2.10 – Concept of Operations

The objective of this subtask is to assist NJ TRANSIT in developing an outline for baseline operations of the microgrid.

Under normal conditions, when the grid is fully available, the microgrid shall be electrically connected to the grid. The generator Plant would deliver energy to NJ TRANSIT facilities as well as Amtrak via the microgrid's proposed frequency converter and direct transmission connections to Amtrak's 138 kV system.

Under a scenario involving a regional or local blackout condition, the microgrid would become the primary source of power for affected traction power facilities. This would require preplanned switching coordination with the utility after it has been determined that utility power will not be restored for an extended time period. If the outage affects the NJ TRANSIT system as well, then the tie points to the grid would also be opened. Interlocks and synchronizing relays would be required at each location where switching into an energized secondary source is needed. After a regional outage, it is likely that the microgrid generator shall be designed to initially trip off line. For this reason, the generator is required to have black-start capability.

(A more detailed discussion of these requirements is presented in the attached Operational Design Concept / SANDIA Phase I Report - Appendix 1.)

Equipment requirements shall be determined and corresponding capital funding needs identified. The Consultant shall provide an approximate schedule for equipment acquisitions, long lead procurement projections, if any, in terms of months prior to service commencement.

For the outline of the baseline operating plan, the Consultant shall work with NJ TRANSIT staff to determine and define physical facility, hardware and software requirements to effectively support integration and interface of the microgrid with

existing railroad traction power demand when regional commercial grid operations are suspended.

The Consultant shall also assist NJ TRANSIT in developing and submitting, to the extent required, necessary registrations/certifications with appropriate energy regulatory agencies or bodies, i.e. NERC Compliance Registry Criteria as applicable including but not limited to Distribution Provider (DP), Load Servicing Entity (LSE), and Transmission Owner (TO) as well as compliance with PJM interconnection requirements as applicable. The Consultant shall provide assistance to NJ TRANSIT in evaluating compliance requirements to Currently Enforceable Standards including but not limited to; FAC-002-1 Coordination of Plans for New generation, Transmission, and End-user Facilities; FAC-008-3 facility Ratings; PER-005-2 Operations Personnel Training; and PRC-005-2 Protection System Maintenance. The Consultant shall assist NJ TRANSIT in compliance activities when resultant findings require such action.

Deliverables:

- Outline of Baseline Operations Model, including applicable drawings, specifications, graphs and diagrams as necessary in support of the concept operating plan (10 copies).
- Registration analyses and applications as necessary and described above.

Subtask 2.3 - Existing Right-of-Way (ROW)

If not available from NJ TRANSIT, the Consultant shall obtain existing railroad valuation maps from the various rail companies and owners of the ROW including but not limited to Amtrak. The Consultant shall utilize the property description for the Power Plant facility and related drawings and maps to develop Project specific ROW documentation. These maps/drawings shall be either enlarged or reduced, to bring them to a scale of 1” = 20’. The ROW, similarly to the contours, shall be incorporated onto the plan/profile drawings.

Early in the project schedule, the proposed standard base sheet for all study drawings shall be developed and submitted to NJ TRANSIT for approval. Typical cross-sections and sketches shall be prepared at an appropriate scale sufficient in number to portray the range of conditions encountered within the study corridor. During the course of the development of project specific design alternatives, a number of additional engineering studies shall be prepared.

Possible design alternatives related studies shall include:

- Examination of geological conditions - The stability of the soils in filled areas, the presence of ground water, and the uncertainty of rock quality all require special attention in development of alignment, cross sections and cost estimates.
- Examination of environmental conditions and/or restrictions requiring alternate design(s) to achieve cost effective compliance.
- Utility relocation and drainage needs identification.
- Right-Of-Way and parcel identification studies - These studies may be needed where certain critical pieces of property need to be protected and utilized for future public transportation use.

Subtask 2.3.1 – Right-of-Way Research and Property Acquisition Preparation

Objective:

The Consultant shall research, collect and review all existing documents relevant or pertaining to the right-of-way, including but not limited to NJ TRANSIT and Amtrak mapping, tax maps, title information etc. and shall conduct field inspections of all areas anticipated to be impacted by this project in order to determine right-of-way available for use.

The Consultant shall perform all necessary surveys, by a surveyor licensed in the State of New Jersey, required for verification of the existing condition, configuration and

dimensions of the right-of-way, and for preparation of site plans at 1" = 20' scale. These surveys shall include but not be limited to:

- All site features, including any and all site improvements.
- Adjacent roadway infrastructure, including bridges, highway lanes, local streets, signals, etc.
- Utilities (electric, gas, water, telephone, fiber optic cable, sanitary sewer and storm sewer).
- Pavement, sidewalks, curbs, landscaping and their condition.
- Site topography at 1 foot contour intervals and key spot elevations.
- Drainage, storm sewers, their sizes, and invert elevations of sewers.
- Definition of property boundaries from tax maps, existing surveys and railroad valuation maps.
- Delineate right-of-way based on the operational needs of NJ TRANSIT.
- Delineation of the results of the Cultural Resources investigation including any required historic, architectural or locational studies (with a report).
- Traffic and operational flow including but not limited to existing traffic control devices and methods.
- Property encroachments.

All surveys shall be of sufficient detail to facilitate the preparation of complete location plans, site plans and design plans, profiles, specifications and complete contract documents. The areas to be surveyed are approximately defined as illustrated in Appendix 2, "Area Location Map". If the Consultant identifies additional areas that must be surveyed, such areas shall be approved by NJ TRANSIT in advance.

In addition, the Consultant shall also be responsible for the development of the necessary plans, maps, metes and bounds descriptions and whatever other information is required to facilitate the purchase of the appropriate property in New Jersey as defined during any subsequent Tasks during this project. The

development of this documentation is expected to be an iterative process as dictated by NJ TRANSIT Real estate Procurement Procedures.

The Consultant shall submit copies of completed field findings on inspection reporting forms (which will be provided by the Consultant and approved by NJ TRANSIT) and meet with NJ TRANSIT staff to discuss those findings as required by NJ TRANSIT. The Consultant shall also identify any additional data needed for determination of existing site conditions, which affect design, and perform the necessary activities to furnish such data.

All surveys are to be produced in a digital format.

Throughout the PE phase, the Consultant shall support NJ TRANSIT in identifying the various properties requiring acquisition of rights or easements. The Consultant shall work towards quantifying the limits of impacted properties based on the proposed infrastructure and staging areas, and in consultation with NJ TRANSIT, determine whether properties must be acquired in whole or in part or if easements, permanent or temporary, can be utilized. Upon NJ TRANSIT direction, the Consultant shall conduct field surveys, research titles, obtain deeds, and prepare description of metes and bounds. The Consultant shall perform supplemental surveys of property metes and bounds for the purpose of determining proposed easements and property acquisitions as may be required.

For Partial Takes, the remaining area shall be identified, described and shown on an IPPM.

The Consultant shall maintain files on all affected properties, and include all relevant information as described in this Section and per property acquisition best practices.

The Consultant shall prepare all deliverables in compliance with New Jersey eminent domain law and all FTA requirements. Information provided on the maps shall at a minimum include ROW perimeter, block and lot numbers, boundary dimensions,

description of improvements, square footage, etc.

The Consultant is not required to appraise properties or acquire properties.

General Note Regarding Property Acquisition Support:

The work of this task shall be performed to provide a timeframe for either acquiring or obtaining the use of property prior to the commencement of construction. The effort for this task shall include:

i. **Deeds and/or Right-of-Way Information**: From public records (courthouse and other sources) the Consultant shall obtain the deeds of right-of-way information for the properties affected. Deeds of surrounding properties shall also be obtained and reviewed for possible conflicts. All of this information shall be plotted and analyzed. Existing Railroad valuation maps shall also be used in the analysis as required.

ii. **Acquisition and/or Property Field Surveys**: The Consultant shall locate existing boundary and property evidence. If required (in case of lack of satisfactory evidence), the Consultant shall survey adjoining properties in search of such evidence. These surveys shall be accomplished in the same datum as the site and track alignment drawings.

iii. **Calculations and Plots**: The acquired information described above shall be completed, plotted and compared with the deeds/right-of-way data developed above. After the necessary adjustments, the final property and/or easement limits shall be computed, including their respective metes and boundaries.

iv. **Drafting Plot Plans and Legal Descriptions**: For each required site, the Consultant shall produce a property and/or easement acquisition plot plan in the format prescribed by the NJDOT Right of Way Engineering Manual. The property/easement lines, their metes and bounds, and areas (remaining and to be taken) shall be drafted on Mylar reproducibles. For each property acquisition and/or easement, the Consultant shall provide a written legal metes and bounds description along with duplicate copies of deed abstract.

v. **Incorporation of Data into NJ TRANSIT PAECETRAK System**:

For each required site, the Consultant shall input all relevant data into the PAECETRAK real estate record data management system. The Consultant shall provide staff and equipment support as necessary to maintain such records and data. Details regarding the PAECETRAK Data Management System are found in Attachment A.

Seven (7) color original signed and sealed copies of Individual Property Parcel Maps (IPPMs) and supporting documentation shall be provided as necessary. If so required, the Consultant shall provide the necessary condemnation maps and descriptions, as well as expert witness testimony for eminent domain procedures.

The Consultant shall research all appropriate real estate records, investigate any and all discrepancies that may exist and recommend solutions to reconcile any errors found or adjustments that need to be made. The Consultant shall assist NJ TRANSIT in the mitigation of such errors as directed by NJ TRANSIT.

Deliverables:

- General Property Parcel Maps (GPPMs),Individual Property Parcel Maps (IPPMs), Temporary and Permanent Easements, Right-Of-Way Survey/Support as detailed above and Site Inspection/Inventory Reports and Surveys (10 copies).
- Data input and maintenance of Project PAECETRAK System as noted above
- General Property Parcel Maps (GPPMs) 50% and final Preliminary Assessment Report.

Subtask 2.3.2 - Screening of Parcels and PAECE Process

Property screening and clearances are required as part of the right-of-way (ROW) acquisition process. NJ TRANSIT has developed a Property Acquisition Environmental Cost Estimating (PAECE) process to assess environmental contamination issues that will impact property value negotiations, design and construction costs. The Consultant

shall provide assistance and support to NJ TRANSIT as required.

Deliverables:

- Property Files and Data containing all required information in support of NJ TRANSIT PAECE process defined above.
- Consultant to review current Federal and New Jersey laws, and local regulations as they pertain to the property acquisition process documentation prior to initiating work, to ensure compliance.

Task 3 - COST ESTIMATING

Cost/performance estimates for various design options may be developed to aid in developing final design requirements and to help support approval and funding of the energy infrastructure improvements.

The Consultant shall develop quantity take-offs and cost estimates for each of the major items on all plans.

General Notes on Cost Estimating

The Consultant shall prepare three cost estimates during the PE phase. The first estimate shall *independently* validate the cost estimate established during the concept phase. This estimate shall be completed within two months of NTP and shall include a reconciliation report addressing major differences between the two estimates.

The second and final estimates shall be engineer's estimates based on the completed 10% and preliminary design (20%) submittals. The final estimate shall be submitted upon completion of the Final submittal, and shall be an accurate and fully quantified estimate for all elements of the project, and shall be suitable for use to evaluate Construction Bids

The estimates shall be developed and formatted to comply with the FTA's Standard

Cost Category (SCC) methodology. Up-to-date unit prices shall be used in every version of the estimate.

As previously noted in this RFP, NJ TRANSIT has developed reporting formats and requirements for cost estimates to be utilized in NJ TRANSIT's Superstorm Sandy Recovery and Resilience Program requirements. In order to maintain consistency, such requirements will be available to the Contractor subsequent to Contract award.

Design Cost Considerations

The Consultant shall implement methods and procedures necessary to identify and incorporate cost savings into the final design.

After each interim design submission and the Final milestone, the Consultant shall be responsible for producing submittals for all sub-projects that are consistent with the available budget. In the event that NJ TRANSIT determines that the expected cost for any element exceeds or would potentially exceed the available budget, the Consultant shall provide at no additional cost to NJ TRANSIT:

- Alternatives to reduce the estimated construction cost, including substitution of materials or methods of construction, deletion of features, etc.;
- Other methods to mitigate the cost increases without minimizing safety or performance.

In presenting the cost control alternatives to NJ TRANSIT, the Consultant shall summarize the changes from previous submittals, including changes in quantities and prices.

The requirement that the Consultant's design be cost effective and does not exceed the Project Budget shall be demonstrated using a third party's independent estimate, thereby validating the Consultant's estimate (not part of PE contract). The third party will

be independently selected by NJ TRANSIT.

Deliverables:

- Independent Initial Cost Estimate
- 10% and 20% Cost Estimates

TASK 4 – Federal Environmental Impact Statement (EIS)

The objective of this task is to support NJ TRANSIT staff and third party Consultants in the development of a Federal Environmental Impact Statement (EIS). The Consultant shall provide requisite engineering and design details in order to verify impacts associated with selected build alternatives as directed by NJ TRANSIT. The Consultant shall also provide technical justification for the extent, configuration and basis of the proposed project including the operational characteristics of the microgrid plan, the function of the improvements and the effect of proposal on the rail system including operational efficiency.

As Directed Work may also include; Depending upon the outcome of the above noted work, the Consultant shall provide a separate assessment of the hydrologic and hydraulic impacts of the project and any watercourse modifications or flood hazard are impacts in sufficient detail to support a general flood hazard area permit application or an individual permit application with hardship waiver requests and justification as necessary.

Deliverables:

Engineering and design details to verify impacts associated with selected build alternatives as discussed above.

Technical justification for the extent, configuration and basis of the proposed project as discussed above.

TASK 5 - STATE AND FEDERAL PERMITS

Objective:

The objective of this task is to support NJ TRANSIT and its' third party Consultant's efforts in the development of applications for all permits and approvals that may be required for project construction and operation. The Consultant shall provide requisite engineering and design details in order to support all Federal, State and Local Permits and Approvals as required. Finally, the Consultant shall ensure that all engineering and design details developed as part of the Project shall conform to permit and approval conditions in Phase I and the subsequent Phase II authorized by NJ TRANSIT. All Project design products shall comply with permit and associated regulatory requirements. The following table identifies some permits/approvals that may be required for project implementation.

Agency	Permit/Approval
NJDEP	Flood Hazard Area Individual Permit & Mitigation Plans
NJDEP	Letter of Interpretation
NJDEP	General Permits as applicable
NJDEP	Freshwater Wetlands Individual Permit & Mitigation Plan
NJDEP	DSHW & Site Remediation
NJDEP	BAQM Air Quality Permitting Program
NJDEP	No Net Loss Reforestation Assessment
County Soil Conservation	Soil Erosion & Sediment Control Certification
USEPA and NJDEP	Memorandum of Agreement
USACOE	Individual Permit
USCG	Individual Permit

Deliverables:

- Engineering and design details in support of all NJ TRANSIT Regulatory Compliance Project Permits and Approvals to Preliminary and Final Application as appropriate.
- Preliminary and Final Documentation as appropriate.

TASK 6 - NJDEP SITE REMEDIATION COMPLIANCE

The objective of this task is to support NJ TRANSIT and its' third party Consultant's efforts in securing all approvals in compliance with NJAC 7:26E, the Technical Requirements for Site Remediation. The Consultant shall assist NJ TRANSIT in completing necessary site characterization by producing any required engineering or design related documentation in satisfaction of the Linear Construction Technical Guidance (where applicable) or other compliance elements in accordance with NJAC 7:26E, by providing required engineering drawings for the preparation of preliminary engineering remediation plans and related information. Such information shall also be utilized in the production submission and completion of LSRP approved project Soils and Ground Water Management Reports also prepared by third party Consultants. Said plans and related documents produced by the Consultant shall be included in the construction bid package.

Deliverables:

- Engineering and design details in support of all NJ TRANSIT Regulatory Compliance
- Documentation as detailed above.

TASK 7 – RISK MANAGEMENT

The consultant shall conduct a risk assessment and management process that shall as a minimum contain the following elements:

- **Preliminary Risk Identification** – The consultant shall develop a preliminary list of all risks (threats or opportunities) that currently exist. The risks shall be entered into the Risk Register. The preliminary Risk Register shall be submitted to NJ TRANSIT for review.
- **Preliminary Workshop** – The consultant and NJ TRANSIT shall meet and review the preliminary Risk Register. The Risk Register shall be refined to add or remove risks. Preliminary discussions shall include who shall own the risk and possible mitigation strategies.
- **Draft Risk Register** – The draft Risk Register developed at the preliminary workshop with NJ TRANSIT shall be sent for review two (2) weeks before the Risk Workshop.
- **Risk Workshop** – A risk workshop shall be scheduled and include a facilitator supplied by the Consultants. Smaller working groups of four (4) to six (6) participants shall be established. Each working groups shall be assigned specific risks to review, evaluate, assign ownership, perform a qualitative analysis and develop mitigation strategies. Each working group shall present their risks and findings to the entire team.
- **Risk Register** – Following the meeting a composite Risk Register shall be developed that lists the risks in priority order, includes ownership and mitigation strategies.
- **Risk Management Plan** – The consultant shall work with NJ TRANSIT to develop schedule and cost implications associated with each risk. The Risk Register shall be circulated for review and comments periodically or as requested, but updated monthly to address comments. Risk is a dynamic aspect of every project and quarterly meetings shall be held with NJ TRANSIT to update the Risk Register.

NJ TRANSIT has developed document formats and requirements for Programmatic submittals in conformance with reporting to be utilized in NJTRANSIT's Superstorm Sandy Recovery and Resilience Program. In order to maintain consistency, such

requirements related to the Risk Assessment Reports and related submissions shall be available to the Contractor subsequent to Contract award.

Deliverable:

- Risk Management Plan, associated meetings and workshop findings reports, updates of the Risk Register following Project Progress Meetings

TASK 8 - SYSTEM SAFETY AND SECURITY MANAGEMENT

Subtask 8.1: SAFETY AND SECURITY MANAGEMENT PLAN

This section requires Consultants to include a Safety and Security Management Plan (SSMP) as an element of the Project Management Plan (PMP) submitted to NJ TRANSIT for review and approval.

The SSMP shall be prepared by NJ TRANSIT and included as part of the PMP to describe how the NJ TRANSITGrid Project shall address safety and security in this major capital project from initial project planning through initiation into Project Operation and Revenue Service.

The information provided herein is provided as a baseline deliverable as well as guidance to prospective Design Consultants relative to the level of effort necessary for satisfaction of this task**.** NJ TRANSIT requires Consultants to assist in the development of Safety and Security Management Plans (SSMPs) as part of their Project Management Plans (PMPs). These SSMPs must contain the 11 sections specified below.

- SECTION 1: MANAGEMENT COMMITMENT AND PHILOSOPHY. NJ TRANSIT requires the first section of the SSMP to include the following:

- Safety and Security Policy Statement. The Consultant will assist NJ TRANSIT in the development and execution of a signed statement, issued by NJ TRANSIT executive management, endorsing the SSMP and confirming the project's commitment to safety and security.

- Purpose of SSMP. The Consultant will assist NJ TRANSIT in the development of a description stating the SSMP is the document that will guide the recipient's integration of safety and security into each phase of the project development process.

- Applicability and Scope. The Consultant will assist NJ TRANSIT in the development of a section categorizing the SSMP as the document for all safety and security activities that NJ TRANSIT performs during the project development process. Rail transit agencies, as defined in 49 CFR 659.5 and commuter rail agencies, must clarify that the applicability of the SSMP extends to ensuring their compliance with State oversight agency and the Federal Railroad Administration (FRA) regulations and requirements, as applicable. NJ TRANSIT must ensure that the applicability of their SSMP extends to the resolution of any restrictions to full safety and security certification, even after the Project has commenced revenue service and operations.

- SSMP Goal. The Consultant will assist NJ TRANSIT in the development of a section of the SSMP that clarifies NJ TRANSIT's use of the SSMP to ensure that the final project commenced into revenue service and operation is safe and secure for passengers, employees, public safety personnel, and the general public.

- SECTION 2: INTEGRATION OF SAFETY AND SECURITY INTO PROJECT DEVELOPMENT PROCESS. NJ TRANSIT requires the second section of the SSMP to include the following:

- Safety and Security Activities. The Consultant will assist NJ TRANSIT in the development of a section of the SSMP that identifies the safety and security tasks that NJ TRANSIT must perform for the project through all phases. This will include both a text description of the activities and a matrix listing these activities and their corresponding project phases.

- Procedures and Resources. The Consultant will assist NJ TRANSIT in the development of a section of the SSMP that identifies the procedures and resources that will support performance of safety and security activities throughout the project phases, including a project budget and schedule for safety and security activities, procedures for managing safety and security contractors, procedures for coordinating safety and security activities with other recipient staff and contractors, and procedures for managing sensitive security information (SSI).

- Interface with Management. The Consultant will assist NJ TRANSIT in the development of a section of the SSMP that identifies the process and lines of communication through which NJ TRANSIT/Project staff shall communicate safety and security issues to project leadership. This shall include an organization chart. In the organization chart or supporting text, the following information shall be included: 1) identify who among the project team leadership has ultimate decision-making responsibilities for safety and security issues, 2) identify these individuals by names, titles and departments or affiliations, 3) explain how these individuals interface with other project team functions regarding safety and security issues, and 4) identify the relationships from project leadership to construction contractors and subcontractors regarding safety and security issues.

- SECTION 3: ASSIGNMENT OF SAFETY AND SECURITY RESPONSIBILITIES. NJ TRANSIT requires the third section of the SSMP to include the following items:

- Responsibility and Authority. The Consultant shall assist NJ TRANSIT in the development of organizational requirements to perform the safety and security tasks identified in Section 2 of the SSMP. In documenting this organization, the name, title, and department/affiliation, all staff and contractors assigned to this organization shall be identified. In addition, for committees established to support this organization, each committee member shall be identified by name, with membership provided by title and affiliation. An organization chart shall also be developed and provided.

- Committee Structure. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that identifies the organization and responsibilities of the different committees that shall be used for the project, including the Safety and Security Review Committee; the Fire/Life Safety Committee; the Safety and Security Change Review Board; and the Safety and Security Operations Review Committee, or other comparable committees.

- Safety and Security Responsibilities Matrix. The Consultant shall assist NJ TRANSIT in the development of a description of the SSMP that identifies the responsibilities and reporting relationships established for recipient staff, committees and contractors performing the safety and security tasks in Section 2 of the SSMP. For all contractors, NJ TRANSIT shall identify a NJ TRANSIT staff member or committee responsible for overseeing the contractor.

- SECTION 4: SAFETY AND SECURITY ANALYSIS. NJ TRANSIT requires the fourth section of the SSMP to include the following:

  - Approach to Safety and Security Analysis. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes the Project's approach to the analysis of safety hazards and security

vulnerabilities. This program shall: (1) identify known hazards and vulnerabilities, (2) categorize them as to their potential severity and probability of occurrence, (3) analyze them for potential impact, and (4) resolve them by design, engineered features, warning devices, procedures and training, or other methods. The Consultant shall assist NJ TRANSIT in the development of a description of the SSMP that identifies the level of hazards and vulnerabilities NJ TRANSIT project management finds acceptable.

- Requirements for Safety and Security Analysis. The Consultant shall assist NJ TRANSIT in the development of a description of the SSMP that specifies the distinct types of safety and security analyses that shall be performed during the project. Examples of analyses that may be identified include Preliminary Hazard Analysis (PHA), Threat and Vulnerability Analysis (TVA), Subsystem Hazard Analysis (SSHA), System Hazard Analysis (SHA), Failure Modes and Effects Analysis (FMEA), Failure Modes, Effects and Criticality Analysis (FMECA), Fault Tree Analysis (FTA), Terrorism Risk Assessment (TRA), Software Safety and Security Analysis (SSSA), Operations and Support Hazard Analysis (O&SHA), Health Hazard Assessment (HHA) and others. The Consultant will assist NJ TRANSIT in the development of a description of the SSMP that identifies the types of analysis to be performed for the project, who shall be performing these analyses (i.e., contractor, committee, in-house personnel, other), and when they shall be performed during the project. The Consultant shall also assist NJ TARNSIT in developing a description of how project personnel shall communicate the results of these analyses to other members of the project team, and the process that shall be used to assure resolution of identified hazards and vulnerabilities resulting from these analyses.

- SECTION 5: DEVELOPMENT OF SAFETY AND SECURITY DESIGN CRITERIA. NJ TRANSIT requires the fifth section of the SSMP to include the following:

    - Approach to Development of Safety and Security Requirements and Design Criteria. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes the project's approach to establishing safety and security requirements and design criteria. This description shall include the resources, including standards prepared by such organizations as the American Public Transportation Association (APTA), the National Fire Protection Association (NFPA), Underwriters Laboratories (UL), etc., that it shall use to develop Project safety and security requirements. This description shall also include how project personnel and contractors shall use the safety and security requirements to develop safety and security design criteria and to identify safety and security certifiable elements and items. In addition, this effort shall explain the Project approach for ensuring that safety and security requirements and design criteria are included in the process to develop final specifications and contract documents for the project. Finally, this section shall also describe how the project documents, including drawings, specifications and reports, shall be maintained in a secure manner while they are in the possession or control of the contractor(s).

    - Design Reviews. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that identifies how the recipient shall address safety and security during design reviews to ensure that its project team incorporates the safety and security requirements into the final project design.

    - Deviations and Changes. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that identifies procedures for ensuring that changes to safety and security design criteria are

appropriately reviewed and approved by recipient personnel prior to adoption.

- SECTION 6: PROCESS FOR ENSURING QUALIFIED OPERATIONS AND MAINTENANCE PERSONNEL. NJ TRANSIT requires the sixth section of the SSMP to include the following:

  - Operations and Maintenance Personnel Requirements. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that identifies the number of personnel and their specific job classifications required to operate and maintain the project in revenue service. The relevant section shall also specify the qualifications and core competencies, required by job classification, for these personnel to ensure their abilities to provide safe and secure service and to respond to emergencies. Special emphasis on the requirements for front-line personnel (i.e., operators, supervisors, station attendants, and maintenance personnel) is required.

  - Plans, Rules and Procedures. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that identifies, by name, the specific safety, security and emergency plans, rules, procedures, and manuals that the recipient shall develop or revise. This section shall also include an implementation schedule.

  - Training Program. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that lists the elements of training the Project shall provide to employees, by job classification, to ensure their capabilities to provide safe and secure service and to respond effectively to emergencies. In addition, the section shall include a schedule for the development and offering of this training and for the completion of any qualifications or certifications required for Project staff. The Consultant shall also assist NJ TRANSIT in the development of a

section of the SSMP that details record keeping requirements and associated implementation relative to personnel training and qualifications/certifications.

- Emergency Preparedness. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that identifies any exercises, drills, tabletops, or other activities that shall be performed to ensure the readiness of the project. This shall include an explanation of how the Project shall assess and document the results (i.e., after action report or equivalent document).

- Public Awareness. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that identifies programs that support NJ TRANSIT's commitment to ongoing, comprehensive public awareness, for both security awareness (such as the Transit Watch Program) and emergency preparedness (such as emergency evacuation instructions to riders).

- SECTION 7: SAFETY AND SECURITY VERIFICATION PROCESS (INCLUDING FINAL SAFETY AND SECURITY CERTIFICATION). NJ TRANSIT requires the seventh section of the SSMP to include the following:

  - Design Criteria Verification Process. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes the process that shall be used to verify that the technical specifications, drawings, and contract documents for the project conform to the Project's safety and security requirements and design criteria. This shall include an explanation of the Project approach to ensure that all required inspections and tests are incorporated into project test plans.

  - Construction Specification Conformance Process. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes the process that shall be used to verify that elements of the

project provided under construction, procurement, and installation contracts conform to the safety and security components of the Project's technical specifications, drawings, and contract documents.

- Testing/Inspection Verification. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes the process that shall be used to verify that the as-built (or delivered) configuration contains the safety and security related requirements identified in the Project technical specifications, drawings, and contract documents. This section shall also describe related programs for contractual testing, systems integration testing, and pre-revenue operations testing.

- Hazard and Vulnerability Resolution Verification. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes the process used to verify that project personnel and contractors have appropriately identified, categorized, and resolved hazards and vulnerabilities to a level acceptable by Project management.

- Operational Readiness Verification. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes the process that shall be used to verify that project personnel and contractors developed plans, rules, procedures, manuals, and training and qualification programs, in conformance with the Project safety and security requirements. Further, this description shall also detail associated processes for ensuring the qualification and readiness of operations and maintenance personnel.

- Safety and Security Certification Requirements. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes the process that shall be used to deliver final certification that the project is safe and secure for passengers, employees, public safety

personnel, and the general public, including the individual certificates the Project shall issue for each of the specific elements to be verified.

- SECTION 8: CONSTRUCTION SAFETY AND SECURITY. NJ TRANSIT requires the eighth section of the SSMP to include the following:

  - Construction Safety and Security Program Elements. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes the Project's program for construction safety and security. This shall include requirements for contractors, including the plans and reports the contractor must submit to the NJ TRANSIT. The description shall also detail the activities the Project shall perform to track and manage contractor construction safety and security programs and plans.

  - Construction Phase Hazard and Vulnerability Analysis. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes the Project's requirements for safety and security analysis at construction sites. This shall include a description of the Project approach for identifying and mitigating hazards or threats unique to the construction phase.

  - Safety and Security Incentives. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that describes (as applicable) any incentives the Project may provide for the construction safety and security program.

- SECTION 9: REQUIREMENTS FOR 49 CFR PART 659, RAIL FIXED GUIDEWAY SYSTEMS; STATE SAFETY OVERSIGHT. NJ TRANSIT requires the ninth section of the SSMP to describe activities the recipient shall perform to coordinate with its State safety oversight agency throughout the project development process. FTA only requires this section for recipients with major capital projects undertaken for rail transit agencies as defined in 49 CFR 659.5. The Consultant shall assist NJ TRANSIT in the development of a section of the

SSMP that identifies the specific State safety oversight agency requirements applicable to the Project and the activities necessary to address these requirements and coordinate with the NJ State safety oversight agencie(s). This shall include (as applicable) a schedule for the activities necessary to ensure compliance with State safety oversight agency requirements.

- SECTION 10: FRA COORDINATION. NJ TRANSIT requires the tenth section of the SSMP only for those recipients that propose to share track with one or more FRA-regulated railroads or that shall operate on the general railroad system. The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that identifies activities necessary to comply with FRA regulations and provide a schedule for the performance of these activities as applicable. This shall also include a description of the process for updating existing System Safety Program Plan(s) and submitting same to FRA for review and approval. The System Safety Program Plan shall conform to the American Public Transportation Association (APTA) "Guidelines for the Development of Commuter Rail System Safety Program Plans." In addition, the Consultant shall assist NJ TRANSIT in the compilation and submission of plans for the completion of a collision/derailment hazard analysis that conform to the hazard management process in the approved SSPP or the "Draft FRA Guide to Collision/ Derailment Hazard Analysis" for FRA review and approval as necessary.

- SECTION 11: DHS COORDINATION. NJ TRANSIT requires the eleventh section of the SSMP to address how the project shall meet Department of Homeland Security (DHS) requirements, including the applicable security directives issued by the Transportation Security Administration (TSA) and other programs managed by the Office of Grants and Training (OGT). The Consultant shall assist NJ TRANSIT in the development of a section of the SSMP that identifies the related compliance activities the Project shall perform and provide an implementation schedule. Any concerns regarding the potential for conflict

between DHS/TSA/OGT and FTA/PMOCs, should be documented in this section.

Deliverable: SAFETY AND SECURITY MANAGEMENT PLAN as detailed above.

TASK 9 – PUBLIC INVOLVEMENT AND AGENCY COORDINATION

Objective:

Assist NJ TRANSIT in targeted outreach efforts to seek input from relevant stakeholders, including the North Jersey Transportation Planning Authority, other regional planning and transportation organizations, municipalities and local government units, electric distribution companies, and other entities as necessary and appropriate.

The objective of this task is to support NJ TRANSIT's efforts regarding public information, stakeholder outreach and agency coordination. The Consultant shall provide assistance and technical support necessary for activities that shall focus upon dissemination of engineering detail status to interested parties including but not limited to preparation of graphics such as maps, schematics, physical design and layout sketches, written handouts, Power Point presentations, brochures, videos, and draft progress engineering/design packages and subsets thereof, etc. A second objective is to assist NJ TRANSIT's efforts to fulfill State and Federal regulatory requirements for public and/or agency participation. NJ TRANSIT shall lead targeted outreach efforts to seek input from relevant stakeholders, including the Federal and State Regulatory agencies, North Jersey Transportation Planning Authority, other regional planning and transportation organizations, municipalities and local government units, electric distribution companies, and other entities as necessary and appropriate. As noted elsewhere in this RFP, the Consultant shall not communicate directly with any potential Agency or stakeholder unless otherwise directed by NJ TRANSIT. All such communications shall be solely through NJ TRANSIT.

Subtask 9.1 - Open Houses and Meetings

If needed, open houses shall be designed to encourage one-on-one discussions between the project staff and members of the public, rather than a large group discussion. Upon the direction of NJ TRANSIT, open houses may be held during milestone points in the engineering/design process. The Consultant shall determine the need for translators or special accommodations at open houses. Facilities selected to host open houses must be accessible to persons with disabilities.

When required by NJ TRANSIT, the Consultant shall assist in presentations to Federal, municipal, county and State representatives and other interested parties. All public outreach activities, including meetings or hearings with local, county and citizen groups shall be initiated and coordinated through NJ TRANSIT. The Consultant shall prepare graphics such as maps, schematics, physical design and layout sketches, written handouts, etc. for assistance and technical support when necessary for these activities as directed by NJ TRANSIT. The Consultant shall attend meetings and events, assisting NJ TRANSIT in accordance with a community information program as directed by NJ TRANSIT. The Consultant shall anticipate a minimum of 10 meetings. Meetings with municipalities or private persons shall occur as needed as the work progresses.

TASK 10 - INTEGRATION AND INTERFACE

The Consultant shall be responsible for implementing an interface and integration process within its overall design process. This shall ensure that individual design elements of the Project interface properly among themselves, existing NJ TRANSIT facilities and infrastructure as applicable, the NJ TRANSIT Corporate-wide SANDY Recovery and Resiliency Plan as well as with the NEC infrastructure and design elements outside this scope. As such, the Consultant shall also coordinate its activities as required with other consultants as well as governmental agencies, individuals and other entities that may be impacted by the Project through NJ TRANSIT.

The Consultant shall prepare and submit to NJ TRANSIT for its approval an Integration Management Plan (IMP). The IMP shall establish and maintain a comprehensive, systematic, documented, verifiable and continuous integration process throughout the duration of the Project in order to achieve NJ TRANSIT's objective as stated herein. At a minimum, the Consultant's interface and integration effort shall:

- Follow the Work Breakdown Structure (WBS) adopted for the Project, and allow capability for future WBS level expansion.
- Provide an integration design document that systematically identifies and formally documents all interfaces and establishes a process for addressing each interface.
- Define methods to confirm interface compatibility and demonstrate said compatibility through tests or other accepted verification methods.
- Coordinate all civil infrastructure, utility, electrical and mechanical interfaces to ensure that they are compatible with other NEC and applicable Project Area design elements.
- Allow NJ TRANSIT to independently assess the effectiveness of, and audit, the Consultant's integration process.

The Consultant shall develop and maintain an Interface Database that lists all physical elements and other interfaces it shall encounter on the Project. Data fields/tables to be included in the database shall include such items as:

- Type of interface with relevant characteristics
- Purpose of the interface
- Status
- Relevant safety standard, if any
- Primary responsibility for defining the interface
- Open issues /conflicts

The Interface Database shall be an integrated part of the Records Management

System.

Approval of the Integration Management Plan by NJ TRANSIT shall not imply in any way that the Plan and Report shall be sufficient to enable the Consultant to meet its obligations under the Contract or that they meet requirements of the Contract.

Upon approval of the IMP, the Consultant shall prepare and submit an Interface Control Report that addresses all identified interfaces during design. At any time during the performance of the Contract, NJ TRANSIT may require the Consultant to modify or revise the Plan as NJ TRANSIT deems necessary.

It is the Consultant's responsibility to successfully achieve the interface and integration of the individual design elements of the Project as well with the design elements of other connected or impacted projects. Successful interface and integration shall have been achieved when the Consultant demonstrates that its design shall allow for progress beyond the preliminary engineering phase without the need for re-engineering or re-design of the individual design elements due to failure to identify or properly address required design interfaces.

Lastly, for all elements of PE design, the Consultant shall always take into consideration the operations and maintenance requirements developed by the consultant and approved by NJ TRANSIT for the Project, and ensure that design criteria does not conflict with O&M requirements for all facets of the completed Project.

Deliverables:

- Integration Management Plan – draft and final
- Interface Control Document (ICD)
- Interface Database
- Integration Report for Amtrak Sub-41

TASK 11 - VALUE ENGINEERING

The Consultant shall provide Value Engineering (VE) support:

1. As a vehicle for the diligent application of “design-to-cost” principles, the Consultant shall conduct two formal Value Engineering exercises during the PE, one at the initial submission and one just prior to the final submission. The VE evaluation shall be applied to all components of the Power Plant Design including structural and operational, related transmission and distribution facilities, natural gas supply, interconnection with the commercial grid and utilities.

The VE team members shall consist of staff outside of the design team and shall be led by Team Leader(s) comprising of:

- Certified Value Specialists, certified by the Society of American Value Engineering (SAVE).
- Licensed Professional Engineers with a minimum of ten years of power generation and railroad experience; multiple subject matter experts shall be involved as required.

The full VE Team qualifications shall be submitted to NJ TRANSIT for review and approval prior to VE exercise. Qualifications shall include a detailed description of work experience and credentials of each proposed team member, demonstrating the specialists’ current technical proficiencies in developing viable project alternatives. At a minimum, the team shall be comprised of specialists representing the following areas:

- Construction – ten years supervision of major railroads;
- Design – ten (10) years experience in Power Plant Design and related Transmission and Distribution Systems as well as the design of major railroad projects, as the Engineer of Record or Design Project Manager;
- Systems – ten (10) years, responsible for operation of a Power Plant with related

Transmission and Distribution Systems approximating the NJ TransitGrid generation rating as well as operations of railroad or segments similar to those contemplated by the Project;

- Other – ten (10) years responsible charge for other discipline experts, such as hydraulic engineers, geotechnical engineers, environmentalists, etc., as may be required to address specific project needs.

The Consultant shall conduct the VE exercise in the following three phases:

a. Pre-study activities. The Team Leader shall coordinate with NJ TRANSIT and others as necessary to ensure that all required information is available to conduct the study. The Team Leader shall provide for sufficient facilities for meetings and a working area, such that they are accessible to the team and project personnel. The Team Leader shall also be responsible for organizing the exercise and shall develop and submit an agenda for NJ TRANSIT review.

b. Conduct the VE exercise: All VE exercises and studies shall be conducted in accordance with the best practices and techniques in accordance with SAVE. The VE Team shall prepare and deliver interim presentations on specific topics as required, to NJ TRANSIT and others as appropriate.

c. Reporting: The Team Leader shall submit VE results and recommendations in a draft VE Summary Report to NJ TRANSIT within two weeks of completing the exercise. Recommendations shall be supported with sufficient detail and calculations to allow prudent decision of implementation. The report shall contain an Executive Summary that discusses in detail the proposed VE alternative, potential savings, and description of costs. The report shall discuss the cost of re-design, regulatory impacts, and other items such as labor, time and impacts to project schedules. The report shall be signed by a Professional Engineer, certifying that the study was conducted using current and approved VE principles.

d. Presentation: The VE Team Leader(s) shall make a formal presentation to NJ TRANSIT management. The presentation shall be coordinated with NJ

TRANSIT's Project Director to ensure that persons authorized to evaluate and act upon the VE recommendations are present.

NJ TRANSIT has developed document formats and requirements for Programmatic submittals in conformance with reporting to be utilized in NJTRANSIT's Superstorm Sandy Recovery and Resilience Program. In order to maintain consistency, such requirements related to the VE Report and related submissions shall be available to the Contractor subsequent to Contract award.

Deliverables:

- VE Team Qualifications Submittal
- VE Agendas
- VE Summary Report – draft and final
- VE Final Presentation
- Formal comments on the independent VE Recommendation Report

TASK 12 - CONSTRUCTABILITY REVIEWS

The Consultant shall participate in formal constructability reviews at the 50% and prior to 100% stages of PE, evaluating issues that affect the construction, adjacent properties and the public. The Consultant shall follow Construction Industry Institute (CII) guidelines, which defines constructability as "the optimum use of construction knowledge and experience in planning, design, procurement and field operations to achieve the overall project objectives." The Consultant shall provide experienced construction personnel to be involved with the project from the earliest stages to ensure that the construction focus and their experience are properly communicated to the project's planners and engineers. Constructability shall be used as a design consideration, by factoring in cost and schedule effectiveness.

Examples of project issues to be considered include:

- Ground Water Control and Containment – evaluation of containment systems, impact on adjacent structures, recharging the water table, construction of groundwater cut-off systems, dewatering needs which shall include provisions for construction monitoring and requirements for drawdown.
- Utilities – evaluate relocations and restorations as needed; minimize large magnitude relocations.
- Maintenance and Protection of Vehicular and Pedestrian Traffic
- Environmental Issues – sensitive areas, hazardous materials, high impact mitigations, compliance with conditions of permits and approvals, etc.
- Materials Handling and Disposal / Spoils Disposal
- Construction Equipment Clearance
- Underpinning of existing facilities/building as applicable.
- Temporary Support Structures - lateral support for excavations, design of proposed support systems, limits of such systems, easement takings, etc.
- Staging of work elements.
- Improvement of a Contractor's productivities.
- Temporary / construction power and other utility requirements.
- Signal, communication and electric traction modifications.

NJ TRANSIT may direct the Consultant or third parties to lead this exercise.

Deliverable:

- Document findings of constructability reviews in a report to NJ TRANSIT.

TASK 13 - CONTRACT PACKAGING

The Consultant shall assess the various components, potential sub-projects, early action activities, constraints, and construction approaches and develop

recommendations for contract packaging and procurement strategies that would produce the best overall value to NJ TRANSIT. The Consultant shall determine factors such as the size and types of contracts, project delivery approaches, and mitigation of constraints brought on by long-lead items. The Consultant shall advise NJ TRANSIT as to the efficacy of procurement methods such as “DBOM”, “EPC”, etc. and how they might be applied to the NJ TransitGrid Project. The Consultant shall consider and report on the benefits and drawbacks of each recommended approach, such as increased cost, level of risk, integration issues, and funding stream.

Deliverables:

- Contract Packaging and Procurement Strategies’ Plan

TASK 14 - PREPARATION AND SUBSEQUENT SUPPORT OF CONTRACT BID DOCUMENTS AND BIDDING PROCESS

The Consultant shall prepare documentation necessary for the procurement of the design, construction, operation, and maintenance services to support operation of the NJ TRANSITGRID service in accordance with Federal, New Jersey State and NJ TRANSIT regulations, standards and requirements as applicable. The sequencing of contracting, i.e., whether to pursue construction and operation through a “Design-Build-Operate-Maintain” (“DBOM”) procurement or some other contracting vehicle, and the documentation that shall be required to be prepared shall be determined following due diligence by NJ TRANSIT in light of the Deliverables in Task 13. In addition, the Consultant shall provide administrative and technical support to NJ TRANSIT in the solicitation, review and award of a successful bid.

The Consultant shall assist NJ TRANSIT in the preparation of bid documents, including the necessary bidding information, bidding forms and Special Provisions of the contract. The Consultant shall assist in answering RFI’s, producing Addenda, and preparation of Conformed Bid documents.

It is likely that any bid process shall involve at least a two-step process and the consultant shall assist NJ TRANSIT in the evaluation of bidders technical and cost proposals.

TASK 15 – ANALYSIS OF ANCILLIARY SERVICES MARKET REVENUE OPPORUNITIES

Enabling legislation for the BPU is contained in P.L. 1999, CHAPTER 23. The Consultant shall be thoroughly familiar with BPU requirements as applied to the construction and operation of the Project Electrical Power Generation Plant and associated Transmission and Distribution and provide NJ TRANSIT support necessary to satisfy said requirements as applicable. This support shall include but not be limited to Project design information necessary to categorize Project infrastructure in order to determine BPU regulatory applicability.

As an example, when applied, the definition of "On-site generation facility" has relevance when determining fees and licensing requirements in accordance with BPU requirements as detailed in Sections 21, 28, 29 and 34 of the enabling legislation. The BPU definition states, “On-site generation facility means a generation facility, and equipment and services appurtenant to electric sales by such facility to the end use customer located on the property or on property contiguous to the property on which the end user is located. An on-site generation facility shall not be considered a public utility. The property of the end use customer and the property on which the on-site generation facility is located shall be considered contiguous if they are geographically located next to each other, but may be otherwise separated by an easement, public thoroughfare, transportation or utility-owned right-of-way”. This analysis shall have a direct bearing upon the Power Plant’s financial profile.

PJM has markets for the following services: Regulation Reserve, Synchronized Reserve, and Nonsynchronized Reserve (10-minute start) and others. In addition, PJM pays a fixed amount per year for the ability to black start, and conducts capacity auctions each year. The Consultant shall assist NJ TRANSIT in determining if

participation in any of the listed PJM market services is statutorily and technically feasible and will result in further revenue optimization from the operation of the Central Power Plant.

TASK 16 – AS DIRECTED BY NJ TRANSIT

Whenever the Contract Item “As Directed Cost by NJ TRANSIT” is referenced in this RFP, NJ TRANSIT has provided an allowance for additional or Supplemental Design and Engineering Consultant Services of xx hours not specifically designated and defined in this RFP. Such an allowance is provided for NJ TRANSIT to augment design and engineering efforts as necessary. This allowance is provided for the sole convenience of NJ TRANSIT and can only be used for work authorized by NJ TRANSIT’s Contracting Officer.

All additional or supplemental tasks authorized under this provision shall be issued by Directive Letter and periodically incorporated into the Contract by Change Order pursuant to Article 5-Modification of Agreement. The Change Order shall describe the additional or supplemental task(s) with any associated cost changes and shall reduce the as directed Cost allowance in the amount specified in the Change Order.

PHASE II - CONSTRUCTION ASSISTANCE/ENGINEERING SUPPORT

At NJ TRANSIT's direction, the Consultant shall provide the necessary qualified personnel to provide engineering support during project construction. Such forces shall be mobilized upon successful award of a separate contract for the Final Design, Construction and Operations of the Project. Additionally, NJ TRANSIT shall approve such staffing resources and any changes made to same. Consultant staff shall form an adjunct to NJ TRANSIT forces providing design change assessments, value engineering support, change order review support and cost estimating support deemed appropriate by NJ TRANSIT. Finally, the Consultant shall provide the engineering and design review oversight support to assist NJ TRANSIT staff in determining that all Project related permit and regulatory approval conditions are satisfied.

General Requirements:

Tasks that shall need to be performed by the Consultant during the construction phase of the Project are the following;

Task 1: Shop Drawing Review
Task 2: Technical Meetings and Workshops
Task 3: CPM Schedule Review
Task 4: Participation in Construction Progress Meetings
Task 5: Risk Management
Task 6: SYSTEMS COORDINATION AND TESTING
Task 7: Support NJ TRANSIT in Dispute Resolutions
Task 8: Change Order Analysis Support
Task 9: NJ TRANSITGRID Start-Up Support
Task 10: Project Closeout Support
Task 11: Alternate Designs
Task 12: As-Directed by NJ TRANSIT

TASK 1 – SHOP DRAWING REVIEW

Shop drawings submitted by the construction, equipment and other contractors shall be reviewed by the Consultant for general conformance with plans and specifications. The Consultant shall also observe and report on the construction contractor's development of procedures for final field check-out and commissioning of the completed project or system elements.

In a similar manner, the Consultant shall review manufacturer's drawings, catalog cuts and data sheets for the materials and or systems incorporated in the work.

Reviews shall be made of the Contractor's plans concerning structure, miscellaneous power and communication apparatuses, and other appurtenances for conformance with contract requirements.

A matrix outlining the submittal review schedule and responsible parties shall be established in coordination with NJ TRANSIT's Project Construction Manager. Unless superseded by other agreements, all reviews are to be performed within twenty-one (21) calendar days, based on a reasonable shop drawing submission schedule to be submitted for the Consultant's approval by each Contractor.

Consultant shall review all comments and changes to contractor submittals with NJ TRANSIT before submission to the contractor. Additional NJ TRANSIT comments shall be incorporated by the Consultant in submission responses.

TASK 2 - TECHNICAL MEETINGS AND WORKSHOPS

The Consultant shall attend pre-bid and pre-construction meetings and workshops, and shall answer design related technical questions during the duration of all construction and procurement contracts.

TASK 3 - CPM SCHEDULE REVIEWS

Each Contractor's schedule shall be reviewed by NJ TRANSIT's Construction Manager and incorporated into the project's Master Construction Schedule (MCS). The Consultant shall assist NJ TRANSIT's Construction Manager in reviewing the initial and all subsequent contractor and Force Account CPM schedules for inclusion into the MCS as required by NJ TRANSIT.

TASK 4 – CONSTRUCTION PROGRESS MEETINGS

The Consultant shall participate in construction meetings with the Contractor, NJ TRANSIT, NJ TRANSIT's Construction Manager, Public Utilities and any other project entities where such attendance is deemed important by NJ TRANSIT.

During the duration of the Construction Phase of the Project it is anticipated that progress meetings shall be held for each contract on a bi-weekly basis, or held more frequently as deemed necessary by the Construction Manager.

TASK 5 – RISK MANAGEMENT

The Consultant shall maintain the Risk Matrix and update the Risk Management Plan as necessary during the Final Design and Construction period.

TASK 6 –SYSTEMS COORDINATION AND TESTING

The Consultant shall assist NJ TRANSIT's Construction Manager in preparing a detailed work plan for acceptance testing criteria, relevant power generation equipment, power distribution and transmission equipment, power plant building systems, microgrid to regional grid interconnections, microgrid control functions, natural gas supply/combustion fuel connection equipment, signal, electric traction, prior to final acceptance of these systems by NJ TRANSIT.

The Construction Manager, NJ TRANSIT, Amtrak, the Contractors and the manufacturer or vendor supplying such systems shall conduct a comprehensive testing program jointly and as applicable for the interconnection of all NJ TransitGrid infrastructure and facilities.

TASK 7 – DISPUTE RESOLUTION SUPPORT

The Consultant shall provide all assistance as may be required to resolve any issue that may arise over the course of the Project as pertains to the interpretation of the plans and specifications.

Such assistance includes meeting attendance and providing assistance in the preparation of any dispute analysis, report or other response as may be required.

TASK 8 – CHANGE ORDER ANALYSIS SUPPORT

All contract changes shall require the approval of NJ TRANSIT Contracting Officer in accordance with NJ TRANSIT's Change Order procedures. The Consultant shall assist NJ TRANSIT's Construction Manager as directed by NJ TRANSIT in the analysis of the issue creating the changed condition and shall participate in the negotiations to perform such work, as deemed necessary by NJ TRANSIT.

The Consultant is reminded that it shall be liable to NJ TRANSIT for any costs incurred during the Construction Phase to correct, modify or redesign any drawings completed by the Consultant that are later found to be defective, or not in accordance with the provisions of this agreement as a result of any act, error or omission on the part of the Consultant or its agents, servants or employees. The Consultant shall be given reasonable opportunity to correct any deficiencies at no additional cost to NJ TRANSIT.

TASK 9 – NJ TRANSITGRID START – UP SUPPORT

The Consultant shall provide technical assistance to NJ TRANSIT's Construction Manager as may be required when the microgrid power plant facility and associated distribution and transmission systems , Signals, Communications and various remaining systems have been tested, approved and are ready for operation.

The Consultant shall also assist in the preparation of plans for initial start-up of operations and shall provide support to NJ TRANSIT before and after initiating operational service as directed by NJ TRANSIT.

TASK 10 – PROJECT CLOSEOUT SUPPORT

Upon determination by NJ TRANSIT's Construction Manager, when a contract is substantially complete, the Consultant shall check all As-Built drawings provided by the Contractor for compliance with the contract plans and specifications, approved shop drawings and approved deviations.

TASK 11 – ALTERNATE DESIGNS

Following direction by NJ TRANSIT, the Consultant shall perform reviews of all alternate designs proposed to be used or implemented by the Contractors ,equipment manufacturers and other business enterprises performing services for the Project. Such assistance includes the review of Contractor Value Engineering proposals.

Recommendations shall be made by the Consultant as to the validity and appropriateness of utilizing any proposed design, which deviates from the original plans and specifications.

TASK 12 – AS DIRECTED BY NJ TRANSIT

Whenever the Contract Item "As Directed Cost by NJ TRANSIT" appears in the RFP, NJ TRANSIT has provided an allowance xx hours for additional or Supplemental Design and Engineering Consultant Services not specifically designated and defined in this RFP. Such an allowance is provided for NJ TRANSIT to augment design and engineering efforts as necessary. This allowance is provided for the sole convenience of NJ TRANSIT and can only be used for work authorized by NJ TRANSIT's Contracting Officer.

All additional or supplemental tasks authorized under this provision shall be issued by Directive Letter and periodically incorporated into the Contract by Change Order pursuant to Article 5-Modification of Agreement. The Change Order shall describe the additional or supplemental task(s) with any associated cost changes and shall reduce the as directed Cost allowance in the amount specified in the Change Order.

PROCUREMENT INFORMATION FOR PROPOSERS

A. Proposal Requirements

The technical submission shall consist of six (6) copies of the technical proposal. If requested by NJ TRANSIT, the cost submission shall consist of three (3) copies of the cost proposal. Technical and cost proposals shall be bound so that individual pages may be easily removed without resorting to cutting or tearing them (i.e. three-ring or similarly fastened binder). All proposals shall be prepared on 8-1/2" x 11 white paper. A limited number of 11" x 17" fold-out sheets for exhibits are acceptable. All pages are to be sequentially numbered.

Unnecessarily elaborate proposals are not being sought. Elaborate artwork, expensive paper and binding, and expensive visual and other preparation aids

are not necessary or desirable. Copies of the technical proposals are to be delivered to NJ TRANSIT on or before the time specified in the RFP cover letter. Copies of the cost proposals are to be delivered to NJ TRANSIT on or before the time specified in its request letter.

Proposals shall be valid for the period of time it takes to negotiate an agreement and execute a contract with the successful firm. Said period of time will not exceed six (6) months from the due date of technical proposals and three (3) months from the due date of cost proposals. A duly authorized official of the firm or joint venture must sign such proposals.

B. **Technical Proposal Format**

Technical proposals shall follow the format outlined below. Should the proposal contain data which the firm does not want disclosed for any purpose other than evaluation of the proposal, such data may be so restricted, provided the firm identifies the appropriate pages of the proposal and places a label on those pages.

I. NOTICE OF EXECUTIVE ORDER 125 REQUIREMENT FOR POSTING WINNING PROPOSAL AND CONTRACT DOCUMENTS

Pursuant to Executive Order No. 125, signed by Governor Christie on February 8, 2013, the Office of the State Comptroller ("OSC") is required to make all approved State contracts for the allocation and expenditure of federal reconstruction resources available to the public by posting such contracts on an appropriate State website. Such contracts are posted on the New Jersey Sandy Transparency website located at: http://nj.gov/comptroller/sandytransparency/contracts/sandy/.

The contract resulting from this [RFP/RFQ] is subject to the requirements of

Executive Order No. 125. Accordingly, the OSC will post a copy of the contract, including the [RFP/RFQ], the winning bidder's proposal and other related contract documents for the above contract on the Sandy Transparency website.

In submitting its proposal, a bidder may designate specific information as not subject to disclosure. However, such bidder must have a good faith legal and/ or factual basis to assert that such designated portions of its proposal (i) are proprietary and confidential financial or commercial information or trade secrets or (ii) must not be disclosed to protect the personal privacy of an identified individual. The location in the proposal of any such designation should be clearly stated in a cover letter, and a redacted copy of the proposal should be provided.

The State reserves the right to make the determination as to what is proprietary or confidential, and will advise the winning bidder accordingly. The State will not honor any attempt by a winning bidder to designate its entire proposal as proprietary, confidential and/or to claim copyright protection for its entire proposal. In the event of any challenge to the winning bidder's assertion of confidentiality with which the State does not concur, the bidder shall be solely responsible for defending its designation.

Cover Letter and Introduction - This section should summarize key points of the proposal and include any introductory or explanatory remarks. The Consultant will demonstrate an understanding of the overall project objectives, areas of concern and technical/managerial approaches to be emphasized in pursuing this work.

Qualifications of Firms - This section shall contain information about the project organizational structure of the team and the personnel required for the project. The availability of professional and technical staff for this project should be shown. Also show anticipated workload for the duration of this project taking into account resources involved with existing proposals and active projects.

Qualifications of Individuals - This section shall contain resumes of the key persons proposed to work on this project. Resumes shall cite formal education, professional licenses and certifications, entire work history, and training in industry skills. Specific skills and any other relevant experiences should be highlighted.

This section shall also demonstrate the key personnel's abilities to meet the Consultant's Qualifications identified in Section II Project Background and Description, Organizational Structure Section above. The Consultant Project Manager is required to have a minimum of ten years (10) years of experience in rail high speed corridor projects, including relevant bridge experience.

This section must contain a certification that the listed key personnel are presently employed by the Consultant Team, or will be on board, and will be assigned to the project in the manner prescribed.

References - A minimum of three client references must be provided for each firm on the consulting team, from completed assignments similar in scope and magnitude to the NJ TRANSIT project to be undertaken.

A minimum of three client references must be provided for each key project staff member. References should include client's name, title, address, telephone number, name of project worked on, start and end dates of assignment, and description of the assignment.

Each firm having performed services for NJ TRANSIT, as a prime Consultant or subconsultant, must provide references as stated above for prior NJ TRANSIT projects.

Work Plan: This section shall contain the work plan for accomplishment of the Scope of Services. The work plan shall address all tasks described in this RFP.

Suggested improvements on the work plan as described in this RFP should be noted in this section. Additional narrative on the services to be performed, which can be used to evaluate the Proposer's understanding of the objectives and overall purpose of the project, is encouraged. This section shall carefully reflect all phases described in the RFP.

Team Organization/Resource Allocation - This section shall address the proposed management structure, manpower allocation, man-hour allocation and assigned individuals for performing the Scope of Services. Include a clear description of how the management structure and assigned personnel fit into the execution of the Scope of Services (previously described), how staff assignments will vary over the project time frame and an explanation of the relationship of the on-site Consultant Project Manager to the top management of the firm, and the extent of his/her authority and responsibility. All other project positions and relationships comprising the project's organizational structure will be presented. The following information shall be included in this section:

- Team Organization Chart showing the reporting and contractual relationships of all firms included in the proposal.

- Matrix of Person-Hours (by name and level) by Firm showing, by task, the total person-hours for the entire team and separately for each firm included in the team. The percentage of person-hours allocated to DBE firms should also be shown.

- Organization and Staffing Chart showing the organization of key personnel by name, title and reporting relationship.

- Matrix: Person-Hours by Individuals showing, for each project staff member, the number of man-hours proposed for each task.

Quality Assurance Plan - This section shall contain a summary of the Proposer QAP outlining the process which will be followed for checking and approval of the Consultant's work product to ensure it is consistent with NJ TRANSIT's expectations and needs. Typical titles of individuals responsible for checking, review and approval shall be identified along with descriptions of experience and/or other qualifications required for these positions. This section is not intended for inclusion of the complete QAP but should be detailed enough to provide for a clear understanding of the firm's QAP process.

Schedule - The Proposer shall prepare a schedule for completion of all the tasks contained in the RFP.

PROPOSERS ARE REQUIRED TO PROVIDE ONE (1) ORIGINAL COPY OF THE FOLLOWING IN A SEPARATE SEALED ENVELOPE.

CONSULTANT CERTIFICATIONS

The Technical Proposal shall include all certifications and affidavits required under this solicitation (i.e., Acknowledgment of Receipt of Addenda, DBE Forms and Affidavits, Contractors Certificate of Eligibility, Non-Collusion Affidavit, Affidavit of Compliance, Business Registration Certificate, Certification for Contracts, Grants, Loans and Cooperative Agreements, Ownership Disclosure Form, Source Disclosure Certification and Disclosure of Investment Activities in Iran.

CONTRACT REVIEW

The Technical proposal shall also contain any exceptions to NJ TRANSIT's Professional Services Agreement (Exhibit A) and identify and submit to NJ TRANSIT with its Technical Proposal any proposed modifications to the Agreement. All exceptions, clarifications, and modifications must be specifically identified and explained in a clearly identified section of the

Consultant's cost proposal. Consultant's standard terms and conditions will not be considered as an exception, clarification, or modification. Exceptions, clarifications or modifications to NJ TRANSIT's Professional Services Agreement that are not provided with the Technical Proposal will not be entertained.

C. **Cost Proposal Format**

NJ TRANSIT will request a Cost proposal from the highest technically qualified Proposer

All proposed expenses will be evaluated to determine their reasonableness and whether they are allowable and allocable. The Federal Transit Administration Cost Standards (Federal Acquisition Regulations Part 31; FAC 84-16, 17, 19) will be used as the guideline in determining the reasonableness of Consultant costs.

One (1) original and three (3) copies of a cost proposal will be requested from the highest ranked Proposer as determined in accordance with Section V. The Proposer must provide a detailed Cost Proposal within seven (7) days of the receipt of the written or verbal notification from NJ TRANSIT regarding their selection. If the Proposer cannot provide its cost proposal within seven (7) working days of request, NJ TRANSIT reserves the right to begin negotiations with the next highest ranked proposer. The cost proposal shall be presented in a person-hour allocation format by discipline and title and shall be separated by salary rate as indicated herein. The format in the cost proposal sheets provided by NJ TRANSIT in Attachment C shall be used for the preparation of the Cost Proposal.

Person-hours by discipline and title shall be separated by task and by salary rate. Direct expenses shall be itemized separately by category for each Task. Direct expenses to the Consultant are in addition to the compensation for payroll additives, salaries and profit and include actual expenditures made by the Consultant’s professional and technical employees and sub consultants

for such expenses as:

1. Travel, sustenance and lodging - NJ TRANSIT will reimburse the Consultant in accordance with the NJ TRANSIT Travel Policy. See Exhibit B: Travel, Subsistence and Lodging Reimbursement Guidelines.
2. Model(s)
3. Reproduction of drawings, specifications and bid packages including plan sets, technical specifications and special provisions for proposal purposes.
4. Telephone
5. Testing
6. Special Equipment
7. Subcontracts less than $10,000.00.
8. All permits necessary for completion of design. Also, fees associated with the review of plans and specifications for conformance to building codes (i.e., NJDCA, NJDEP, etc.). Where possible, NJ TRANSIT will pay permit fees directly.
9. Expense of the premium portion for overtime work requiring higher than regular rates, when authorized in writing by NJ TRANSIT.

The person-hours and direct expenses shall be summarized by Task and by firm in the Consultant's cost proposal and include overhead, profit, etc. Overhead and profit assumptions are to be shown as per Attachment C. Direct salary cost is defined as base salary paid to technical employees (excluding mandatory and customary benefits such as statutory employee benefits, insurance, sick leave, holidays and vacations, pensions and similar benefits). If clerical support is required and if it is not included in overhead or direct expenses, it must be itemized in the same fashion as other staff in the proposed cost detail.

The Proposer shall state and specifically identify the percentage of DBE participation by Phase and Task.

The Contract will be a cost plus fixed fee type with a maximum amount not to be exceeded. The profit (fixed fee) shall be negotiable on a task-by-task basis and shall not exceed ten percent (10%) on labor overhead and fringe costs; there should be no profit on direct expenses. No overhead burden of profit (fixed fee) is allowed on subcontracting or direct costs.

Each Phase and Task in this contract will have a specified amount identified equal to the negotiated proposed cost for each Phase and Task. Expenditures greater than the identified amount and incurred by the Consultant during the course of the execution of the Contract shall not be reimbursed unless previously approved by NJ TRANSIT prior to the performance of the work.

The firm must demonstrate its financial capability, including financial resources to sustain operations between the time expenses are incurred and the time payment is made. The proposal shall include the latest year-end financial statement as prepared by an independent auditing firm.

Each firm on the Consultant's team must submit a listing of the items charged to the project overhead rate and the corresponding percentages. Overhead rates are not restricted, but must be documented by a recent (within the past three years) State, Federal or independent audit. Each firm is also required to submit their overhead projections in schedule format for the duration of the project.

All costs, including indirect cost items are subject to negotiation. NJ TRANSIT intends to negotiate provisional indirect cost rates, which are subject to audit and downward adjustment only.

D. Method of Selection

A. PROPOSAL DISTRIBUTION

NJ TRANSIT will provide a copy of each technical proposal to the Technical Evaluation Committee (TEC).

B. PROPOSAL EVALUATION

Each individual on the TEC will review and evaluate the written technical proposals based on quality and substance of the submitted proposal. Written technical proposals will be scored against the criteria enumerated in Attachment A for technical proposals. The written technical proposal evaluations will be used by NJ TRANSIT to determine the "competitive range". Firms may be asked to be prepared for specific situational questions prior to or at the Oral Presentation.

Oral Presentations will be requested from at least three (3) qualified Proposers within the competitive range, except NJ TRANSIT may select fewer Proposers if fewer such firms respond to the solicitation or meet the qualifications for the project.

Oral Presentations will provide an opportunity for the Proposer to clarify or elaborate on its written technical proposal. The TEC will conduct the Oral Presentations. The TEC will use the Oral Presentations to confirm and/or reassess its understanding of the written technical proposals, and incorporate that information into its evaluation by revising the written technical evaluation scores accordingly.

NJ TRANSIT reserves the right to assess and reassess its understanding of proposals and revise the rating and ranking of such proposals at any time prior to selection.

Reference checks will be performed for each Proposer deemed within the competitive range and the results furnished to the TEC. Although the

reference checks will not be scored per se, they will be used to validate information contained in the technical proposal.

D. NEGOTIATIONS

NJ TRANSIT will request a cost proposal from the highest technically qualified firm.

NJ TRANSIT will enter into negotiations with the highest technically qualified firm to reach an agreement on the Scope of Services and fees. If in the opinion of NJTRANSIT a satisfactory Contract cannot be negotiated with a selected firm, NJ TRANSIT will formally end negotiations and initiate negotiations with the next most technically qualified firm.

This negotiation procedure will be followed until a satisfactory Contract is negotiated. NJ TRANSIT considers all elements of the Proposer's proposal subject to negotiations.

E. APPROVAL AND AWARD

Once negotiations have been completed, a recommendation for award of the Contract to the Proposer, whose proposal conforming to the RFP, is in the best interest and provides the best value to NJ TRANSIT will be made for approval by NJ TRANSIT's Board of Directors. Upon approval of the recommendation for award of a contract, NJ TRANSIT will enter into a cost plus fixed fee contract found in Exhibit A.

Within ten (10) working days of receipt of Notice of Award, the successful Proposer shall properly execute two (2) copies of the Contract and deliver to NJ TRANSIT both signed copies of the Contract, the specified insurance certificates and any other document as may be specified in the Contract. NJ TRANSIT will execute both copies of the contract and will return one (1) executed copy to the firm.

G. Protest Procedures

a. Purpose

This section describes the policies and procedures governing the receipt and resolution of vendor protests in connection with this Request for Proposal.

b. Policy

1. Parties: Only an interested party may file protest.

2. Types of Protests / Time Limits

a. Protests based upon alleged restrictive specifications or alleged improprieties in NJ TRANSIT's procurement process must be filed no later than five (5) days prior to the bid opening date, or no later than five (5) days prior to the closing date for receipt of initial proposals.

b. Protests based upon alleged improprieties of a Proposal shall be filed no later than five (5) days after the Protestor knows or should have known of the facts giving rise thereto.

c. Protests based upon the award of a contract shall be filed no later than five (5) days after the notification to the unsuccessful firms of NJ TRANSIT's intent to award, or no later than five (5) days after an unsuccessful firm becomes aware of NJ TRANSIT's intent to award a contract, whichever comes first.

d. All protests must be filed in writing. Oral protests will not be accepted.

3. Where to File

Protests must be filed directly with NJ TRANSIT's Contracting Officer, or designee, at the address indicated in the solicitation.

4. The Protest

a. The protest must contain the following information:

i. The name, address and telephone number of the protestor.

ii. Identity of the RFP (by number and description).

iii. A statement of the specific grounds for protest and any supporting documentation. Additional materials in support of the protest will only be considered if filed within the time limits set in Paragraph B.

iv. An indication of the ruling or relief desired from NJ TRANSIT.

b. If the protest is filed after notification of NJ TRANSIT's intent to award and prior to contract award, the Potential Consultant will be advised by NJ TRANSIT of the pending protest.

c. If deemed appropriate by NJ TRANSIT, an informal conference on the merits of the protest may be conducted with all interested parties allowed to attend.

5. Confidentiality of Protest

Material submitted by a protestor will not be withheld from any interested party, except to the extent that the withholding of information is permitted or required by law or regulation. If the protestor considers that the protest contains proprietary material, which should be withheld, a statement advising of this fact must be affixed to the front page of the protest documents and the alleged proprietary information must be so identified wherever it appears.

6. Response to the Protest

NJ TRANSIT's Contracting Officer, or designee, will respond to the protest within a reasonable time after receipt of the protest by NJ TRANSIT. NJ TRANSIT's response shall address only the issues raised originally by the protestor.

7. Rebuttal to NJ TRANSIT's Response

The protestor may submit a written rebuttal to NJ TRANSIT's response, addressed to the Contracting Officer, but must do so within five (5) days after receipt of the original NJ TRANSIT response. New issues in the rebuttal will not be addressed by NJ TRANSIT. After receipt of the protestor's rebuttal, the Contracting Officer will review the protest and notify the protestor of his final decision.

8. Request for Additional Information

Failure of the protestor to comply expeditiously with a request for information as specified by NJ TRANSIT's Contracting Officer or designee may result in determination of the protest without consideration of the additional information. If any parties to the protest request information from another party, the request shall be made to NJ TRANSIT's Contracting Officer, or designee, and shall be complied with by the other party within five (5) days if NJ TRANSIT so directs.

9. Request for Reconsideration

If data becomes available that were not previously known, or there has been an error of law, a protestor may submit a request for reconsideration of the protest. NJ TRANSIT's Contracting Officer will again review the protest considering all currently available information. The Contracting Officer's determination will be made within a reasonable period of time, and his decision will be final.

10. Procurement Process Status

Upon timely receipt of a protest, NJ TRANSIT will delay the receipt of proposals until after resolution of the protest for those protests filed prior to the proposal due date, or withhold award until after resolution of the protest for protests filed after receipt of proposals. However, NJ TRANSIT may receive proposals or award a contract whenever NJ TRANSIT, at its sole discretion, determines that:

a. The items or work to be procured are urgently required; or
b. Delivery or performance will be unduly delayed by failure to make the award promptly, or
c. Failure to make prompt award will otherwise cause undue harm to NJ TRANSIT or the Federal Government.

11. Federal Transit Administration (FTA) Involvement

Where procurements are funded by the FTA, the protestor may protest to the FTA only where the protest alleges that NJ TRANSIT failed to have or to adhere to its protest procedures, failed to review a complaint or protest, or a violation of Federal law or regulation. Any protest to the FTA must be filed in accordance with FTA Circular 4220.1f.

12. Definitions

a. "Days" means working days.
b. "File or Submit" means date of receipt by NJ TRANSIT's Contracting Officer.
c. "Federal Law or Regulation" means any valid requirement imposed by Federal statue or regulation governing contracts awarded pursuant to a grant agreement between NJ TRANSIT and the FTA. This includes the requirements as stated in FTA Circular 4220.lf.
d. "Contracting Officer" means the NJ TRANSIT's Chief of Procurement and

Support Services or his designee.

e. "Interested Party" means all proposers. It may also include a subcontractor or supplier provided they have a substantial economic interest in a portion of the RFP.
f. "Potential Consultant" means the proposer that is in line for award of the contract in the event that the protest is denied.