



**NOTICE OF A REGULAR MEETING TO BE HELD BY THE  
McALLEN PUBLIC UTILITY BOARD OF TRUSTEES**

**DATE:** Tuesday, May 9, 2023

**TIME:** 4:00 P.M.

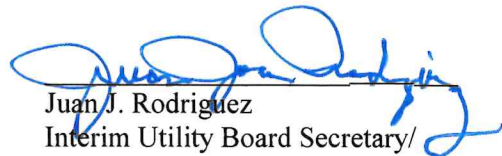
**PLACE:** McAllen City Hall  
Commission Chambers – 3<sup>rd</sup> Floor  
1300 Houston Avenue  
McAllen, Texas 78501

**SUBJECT MATTER:**

**See Subsequent Agenda.**

**CERTIFICATION**

I, the Undersigned authority, do hereby certify that the attached agenda of meeting of the McAllen Public Utility Board of Trustees is a true and correct copy and that I posted a true and correct copy of said notice on the bulletin board in the Municipal Building, a place convenient and readily accessible to the general public at all times, and said Notice was posted on the 5th day of May, 2023 at 3:00 P.M. and will remain so posted continuously for at least 72 hours preceding the scheduled time of said meeting in accordance with Chapter 551 of the Texas Government Code.

  
Juan J. Rodriguez  
Interim Utility Board Secretary/  
Assistant General Manager



**BOARD OF TRUSTEES MEETING  
TUESDAY, MAY 9, 2023 – 4:00 PM  
MCALLEN CITY HALL - 3RD FLOOR  
1300 HOUSTON AVE, MCALLEN TX, 78501**

## **AGENDA**

**AT ANY TIME DURING THE COURSE OF THIS MEETING, THE MCALLEN PUBLIC UTILITY BOARD MAY RETIRE TO EXECUTIVE SESSION UNDER TEXAS GOVERNMENT CODE 551.071(2) TO CONFER WITH ITS LEGAL COUNSEL ON ANY SUBJECT MATTER ON THIS AGENDA IN WHICH THE DUTY OF THE ATTORNEY TO THE MCALLEN PUBLIC UTILITY BOARD UNDER THE TEXAS DISCIPLINARY RULES OF PROFESSIONAL CONDUCT OF THE STATE BAR OF TEXAS CLEARLY CONFLICTS WITH CHAPTER 551 OF THE TEXAS GOVERNMENT CODE. FURTHER, AT ANY TIME DURING THE COURSE OF THIS MEETING, THE MCALLEN PUBLIC UTILITY BOARD MAY RETIRE TO EXECUTIVE SESSION TO DELIBERATE ON ANY SUBJECT SLATED FOR DISCUSSION AT THIS MEETING, AS MAY BE PERMITTED UNDER ONE OR MORE OF THE EXCEPTIONS TO THE OPEN MEETINGS ACT SET FORTH IN TITLE 5, SUBTITLE A, CHAPTER 551, SUBCHAPTER D OF THE TEXAS GOVERNMENT CODE.**

### **CALL TO ORDER**

### **PLEDGE**

### **INVOCATION**

#### **1. MINUTES:**

- a) Approval of Workshop and Regular Meeting Minutes held May 25, 2023.

#### **2. BIDS AND CONTRACTS:**

- a) Recommendation for selection and award of Design Phase Consulting Engineering Services for the South McAllen Generator Upgrade Project
- b) Consideration and Approval to Purchase Collection System Aerators for Balboa Acres & NWWTP Lift Stations

#### **3. FUTURE AGENDA ITEMS**

#### **4. EXECUTIVE SESSION, CHAPTER 551, TEXAS GOVERNMENT CODE, SECTION 551.071 CONSULTATION WITH ATTORNEY, SECTION 551.072 LAND TRANSACTION, SECTION 551.074 PERSONNEL MATTERS; SECTION 551.087 ECONOMIC DEVELOPMENT NEGOTIATIONS**

- a) Consultation with City Attorney regarding legal issues with contract negotiation. (Section 551.071, T.G.C)

## **ADJOURNMENT**

**IF ANY ACCOMMODATION FOR A DISABILITY IS REQUIRED (OR INTERPRETERS FOR THE DEAF), NOTIFY UTILITY ADMINISTRATION (681-1630) FORTY-EIGHT (48) HOURS PRIOR TO THE MEETING DATE. WITH REGARD TO ANY ITEM, THE MCALLEN PUBLIC UTILITY BOARD OF TRUSTEES MAY TAKE VARIOUS ACTIONS; INCLUDING BUT NOT LIMITED TO RESCHEDULING AN ITEM IN ITS ENTIRETY FOR A FUTURE DATE OF TIME. THE MCALLEN PUBLIC UTILITY BOARD MAY ELECT TO GO INTO EXECUTIVE SESSION ON ANY ITEM WHETHER OR NOT SUCH ITEM IS POSTED AS AN EXECUTIVE SESSION ITEM AT ANY TIME DURING THE MEETING WHEN AUTHORIZED BY THE PROVISIONS OF THE OPEN MEETINGS ACT.**

**THE NEXT REGULARLY SCHEDULED BOARD MEETING WILL BE HELD ON MAY 23, 2023**



	<b>AGENDA ITEM</b>	<b><u>1.a.</u></b>
<b>PUBLIC UTILITY BOARD</b>	<b>DATE SUBMITTED</b>	<b>05/03/2023</b>
	<b>MEETING DATE</b>	<b>5/9/2023</b>

1. Agenda Item: Approval of Workshop and Regular Meeting Minutes held May 25, 2023.

2. Party Making Request:

3. Nature of Request:

4. Budgeted:

<b>Bid Amount:</b>	_____	<b>Budgeted Amount:</b>	_____
<b>Under Budget:</b>	_____	<b>Over Budget:</b>	_____
		<b>Amount Remaining:</b>	_____

5. Reimbursement:

6. Routing:  
Savannah Arredondo                      Created/Initiated - 5/3/2023

7. Staff's Recommendation:

8. City Attorney: Approve. IJT

9. MPU General Manager: Approved - MAV

10. Director of Finance for Utilities: Approved - MDC

**STATE OF TEXAS  
COUNTY OF HIDALGO  
CITY OF MCALLEN**

The McAllen Public Utility Board (MPUB) convened in a Regular Meeting on **Tuesday, April 25, 2023**, at 4:00 pm at in the City Commission Chambers at City Hall with the following present:

	Ernest Williams	Vice-Chairman
	Javier Villalobos	Ex-Officio Member/Mayor
	Albert Cardenas	Trustee
	Ricardo Godinez	Trustee
Absent:	Charles Amos	Chairman
Staff:	Marco A. Vega, P.E.	General Manager
	Isaac Tawil	City Attorney
	J.J. Rodriguez	Assistant General Manager
	Savannah Arredondo	Assistant to the Utility Board Secretary
	Melba Carvajal	Director of Finance for Utilities
	Pablo Rodriguez	Assistant Director for Customer Relations
	Terri Uvalle	Assistant Director of Billing
	Carlos Gonzalez, P.E.	Utility Engineer
	Edward Gonzalez	Director of Water Systems
	David Garza	Director of Wastewater Systems
	Erika Gomez, EIT	Assistant Utility Engineer
	Yesenia Tijerina	Senior Administrative Clerk
	Elvira I Alonzo	Director Public Works
	Marco Ramirez, P.E.	Utility Engineer
	Gerardo Noriega	Purchasing Director
	Juan M. Vallejo	Assistant Director Water Systems
	Rafael Balderas, EIT	Assistant Utility Engineer
	Jolee Perez	Director of Employee Benefits
	Rosa Pedraza	Assistant Director of Benefits
	Lance Nelson	Water Plant Manager
	Janet Landeros	Grands & Contracts Coordinator
	Juan Vallejo	Water Plant Operator
	Daniel Reyna	Water Plant Manager
	Jim Sides	Video Production Specialist
	Fernando Hernandez	Assistant Direct of Risk Management
	Christina Molano	Water Lab Manager

**CALL TO ORDER:**

Vice-Chairman Williams called the meeting to order at 4:13 p.m.

**1. MINUTES:**

- a) Approval of Special Meeting Minutes held April 6, 2023.

Mr. Cardenas moved to approve the minutes for the special meeting held on April 6<sup>th</sup>, 2023. Mayor Villalobos seconded the motion. The motion carried unanimously by those present.

**2. CONSENT AGENDA**

Trustee Godinez requested to pull item 2a for discussion. Trustee Cardenas moved to approve items 2b through 2e. Mayor Villalobos seconded the motion. The motion carried unanimously by those present.

- a) Consider Adopting an Order of the Board of Trustees to Revise and Update MPU's Water Conservation and Drought Contingency Plan

Trustee Godinez requested an update on the plan and why it is important. Mr. Marco Vega, P.E., General Manager, stated that the plan developed a conservation strategy for reducing the volume of water withdrawn from a water supply source, reducing the loss or waste of water, increasing the recycling and reuse of water, and preventing the pollution of water. The basic goal of this plan is to ensure an uninterrupted supply of water in an amount sufficient to satisfy essential human needs. The rest is strategies and steps to be taken during a water shortage. This addresses several issues in our water system, including reuse water and wastewater systems, and it provides guidance on our sources of raw water. The most important part is on page 11, showing the triggers. There are two types of triggers: the demand type and the supply type.

Trustee Godinez moved to approve Adopting an Order of the Board of Trustees to revise and Update MPU's Water Conservation and Drought Contingency Plan. Mayor Villalobos seconded the motion. The motion carried unanimously.

- b) Approval of the Fire Fighter Training Facility Subdivision.
- c) Approval of the Mikada Subdivision.
- d) Approval of the Silber Oak Subdivision.
- e) Approval of Vargas Patrimony Subdivision.

**3. BIDS AND CONTRACTS:**

- a) Award of Contract for City of McAllen Employee Dental Plan

Jolee Perez, Employee Benefits Director, stated that the benefits are mainly the same the change is the carrier. She noted the dental plan will have a five cent increase, the vision plan will decrease a couple cents and the life insurance the base rate will decrease as well.

Trustee Godinez moved to approve items 3a through 3c. Mayor Villalobos seconded he motion. The motion carried unanimously by those present.

- b) Award of Contract for City of McAllen Employee Vision Plan
- c) Award of Contract for City of McAllen Employee Basic Life, Voluntary Life and Disability Plans.
- d) Consideration and Authorization to Declare MPU Property as Surplus

Elvira Alonzo, Public Works Director, stated that they are seeking authorization to declare surplus on six vehicles and approximately three miscellanies items.

Trustee Cardenas moved to approve the authorization to declare MPU property as surplus. Trustee Godinez seconded the motion. The motion carried unanimously by those present.

- e) Consider Professional Services Amendment #2 for Reuse Master Plan Update Project.

Trustee Cardenas moved to approve professional services amendment #2 for reuse master plan update project. Trustee Godinez seconded the motion. The motion carried unanimously by those present.

#### **4. FUTURE AGENDA ITEMS**

Mr. Marco Vega, P.E., General Manager reminded and encourages the board and citizens of the upcoming Annual Night out happening Thursday, April 27, 2023 from 5 p.m. to 8 p.m.

#### **5. EXECUTIVE SESSION, CHAPTER 551, TEXAS GOVERNMENT CODE, SECTION 551.071 CONSULTATION WITH ATTORNEY, SECTION 551.072 LAND TRANSACTION, SECTION 551.074 PERSONNEL MATTERS; SECTION 551.087 ECONOMIC DEVELOPMENT NEGOTIATIONS**

Executive Session recessed during workshop. Mr. Tawil, City Attorney recommended no action taken on items 5a and 5b.

- a) Consultation with City Attorney regarding pending litigation before the PUC (T.G.C. 551.071)
- b) Discussion and possible lease, sale or purchase of Real Property, Tract 1 (Section 551.072, T.G.C)

**ADJOURNMENT**

There being no other business to come before the Board, the meeting was unanimously adjourned at 4:28 p.m.

\_\_\_\_\_  
Charles Amos, Chairman

Attest:

\_\_\_\_\_  
Juan J. Rodriguez  
Interim Utility Board Secretary/  
Assistant General Manager



**STATE OF TEXAS  
COUNTY OF HIDALGO  
CITY OF MCALLEN**

The McAllen Public Utility Board (MPUB) met in a Workshop on **Tuesday, April 25, 2023** at 3:00 p.m. in the City Commission Chambers and City Hall with the following present:

	Ernest Williams	Vice-Chairman
	Albert Cardenas	Trustee
	Ricardo Godinez	Trustee
	Javier Villalobos	Mayor/Ex-Officio
Absent:	Charles Amos	Chairman
Visitor:	Ellen McDonald, PhD, P.E.	Plummer & Associates
	Brigit Buff	Plummer & Associates
	Jacob Garza	Cobb Fendley Eng.
	Melba Figueron	Puro Aseguro Inc.
Staff:	Marco A. Vega, P.E.	General Manager
	Isaac Tawil	City Attorney
	Juan J. Rodriguez	Assistant General Manager
	Savannah Arredondo	Assistant to the Utility Board Secretary
	Janet Landeros	Grants & Contracts Coordinator
	Melba Carvajal	Director of Finance for Utilities
	David Garza	Director of Wastewater Systems
	Edward Gonzalez	Director of Water Systems
	Carlos Gonzalez, P.E.	Utility Engineer
	Marco Ramirez, P.E.	Utility Engineer
	Rafael Balderas	Assistant to the Utility Engineer
	Erika Gomez	Assistant to the Utility Engineer
	Jim Sides	Video Production Specialist
	Daniel Solis	Help Desk Coordinator
	Juan Vallejo	Assistant Director of Water Systems
	Christina Flores	Director of Human Resources
	Yesenia Tijerina	Senior Administrative Clerk
	Pablo Rodriguez	Assistant Director of Customer Relations
	Terri Uvalle	Assistant Director of Billing
	Jolee Perez	Director of Employee Benefits
	Jeff Johnson	Assistant City Manager
	Rosa Pedraza	Assistant Director of Employee Benefits

**1) Presentation & Discussion on Longevity Pay for Full-Time Employees.**

Christina Flores, Director of Human Resources and Jeff Johnson, Assistant City Manager made the presentation on the proposed Longevity Pay for Full-Time Employees. This item will be presented to the Board for approval at a later date.

**2) Reuse Master Plan Update Presentation by Plummer & Associates**

Ellen McDonald, PhD, P.E., with Plummer and Associates made a presentation on the Reuse Master Plan Update.

**3) EXECUTIVE SESSION, CHAPTER 551, TEXAS GOVERNMENT CODE, SECTION 551.071 CONSULTATION WITH ATTORNEY, SECTION 551.072 LAND TRANSACTION, SECTION 551.074 PERSONNEL MATTERS; SECTION 551.087 ECONOMIC DEVELOPMENT NEGOTIATIONS**

Vice-Chairman Williams recessed the meeting at 3:49 p.m. to go into Executive Session. Vice-Chairman Williams reconvened the meeting at 4:11 p.m. with no action.

- a) Consultation with City Attorney regarding pending litigation before the PUC (T.G.C. 551.071).
- b) Discussion and possible lease, sale or purchase of Real Property, Tract 1 (Section 551.072, T.G.C).

**ADJOURNMENT**

There being no other business to come before the Board, the workshop was unanimously adjourned at 4:11 p.m.

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Charles Amos, Chairman

Attest:

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Juan J. Rodriguez  
Interim Utility Board Secretary/  
Assistant General Manager



AGENDA ITEM 2.a.

PUBLIC UTILITY BOARD

DATE SUBMITTED 05/03/2023

MEETING DATE 5/9/2023

1. Agenda Item: Recommendation for selection and award of Design Phase Consulting Engineering Services for the South McAllen Generator Upgrade Project
2. Party Making Request:
3. Nature of Request: Recommendation for selection and award of Design Phase Consulting Engineering Services for the South McAllen Generator Upgrade Project
4. Budgeted: Yes

Bid Amount:	<u>\$217,650</u>	Budgeted Amount:	<u>\$150,000</u>
Under Budget:	<u>\$0.00</u>	Over Budget:	<u>\$67,650</u>
		Amount Remaining:	<u>\$0.00</u>
5. Reimbursement:
6. Routing:

Carlos Gonzalez	Created/Initiated - 5/3/2023
Gerardo Noriega	Final Approval - 5/3/2023
7. Staff's Recommendation: Staff recommends Selection and Award of Consulting Engineering Services as proposed. Note that a Budget Amendment and/or a Budget Reclassification will be required to fund balance.
8. City Attorney: Approve. IJT
9. MPU General Manager: Approved - MAV
10. Director of Finance for Utilities: Approved - MDC

# Memo

**TO:** Marco A. Vega, P.E., General Manager  
J.J. Rodriguez, Asst. General Manager

**FROM:** Carlos Gonzalez, P.E., Utility Engineer

**DATE:** April 19, 2023

**SUBJECT: South Water Treatment Plant Generator Project; Consulting Engineer Selection and Award**

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Halff Associates recently completed a Generator Evaluation Study for our South Water Treatment Plant. The Study evaluated existing and/or proposed load demands from the South Water Treatment Plant and presented a number of alternatives for increasing existing “Back-up” Generator Capacity. The Generator Study findings were presented to our Board in a Workshop. Staff is recommending that we move forward with Engineering Design Phase Services for the Generator upgrade project.

Staff is recommending that we select Halff Associates to continue with Design Phase Services that will include:

- Generator Design and Performance Specification Preparation
- Electrical Site Plan Layout Preparation
- SCADA Integration that will include Load-shedding capabilities.
- A separate Competitive Sealed Proposal Bid solicitation for Generator including alternate bid items for both diesel and natural gas engines.
- Options for Back-up Generator at the new South Reservoir.

A copy of detailed Scope Proposal, including deliverables, is attached. Halff Associates is proposing a Lump Sum fee not to exceed \$ 217,650.

Staff is respectfully requesting Board Approval for selection and award of this professional services contract for a fee of \$217,650. Our current Budget includes a line item of \$150K for this project. Thus, a budget amendment and/or a budget reclass will be required to fund the difference.

Staff will be available for comments or questions.



May 2, 2023

53426.002

Carlos Gonzales, PE  
McAllen Public Utilities  
1300 Houston AVE.  
McAllen, Texas 78501

**DRAFT**

RE: McAllen Public Utilities South McAllen Water Treatment Plant – Power Backup Generator  
Electrical Design Services  
McAllen, Texas

Dear Mr. Gonzales:

Halff Associates is pleased to submit this proposal to provide surveying and electrical engineering services for the above referenced project.

Halff associates was awarded RFQ Project No. 04-20-S33-352 for professional services for the South Water Treatment Facility Electrical Power Assessment and Generator Study. In June 2022, Halff finalized the study and provided backup power system recommendations to MPU staff and the MPUB. Refer to Appendix A for study and recommendations. This scope of work includes design services to develop construction documentation for a new centralized standby backup generator that will be interconnected with new automatic transfer switches. The design will be based on a list of water treatment plant electrical loads that are most critical for process operations during utility outage situations. The plant loads will be provided by MPU staff to Halff for genset sizing. Main 15KV switchgear scope to upgrade the equipment with PLC based automation is also included in scope of work. The scope also includes design services to implement a separate backup generator for the Boeye Reservoir Pump Station site.

Your signature on the Authorization line below will serve as our notice to proceed with this work. Please return one copy of the entire agreement signed to me via email and return one original. This will act as our Notice to proceed. Work under this proposal will commence immediately upon our receipt of a fully executed agreement. Costs incurred will be carefully monitored during the progress of this project. Our services will be invoiced monthly based on a percent of completion of the total of lump sum fees. Reimbursable expenses will be billed separately at 1.10 times the direct cost incurred.

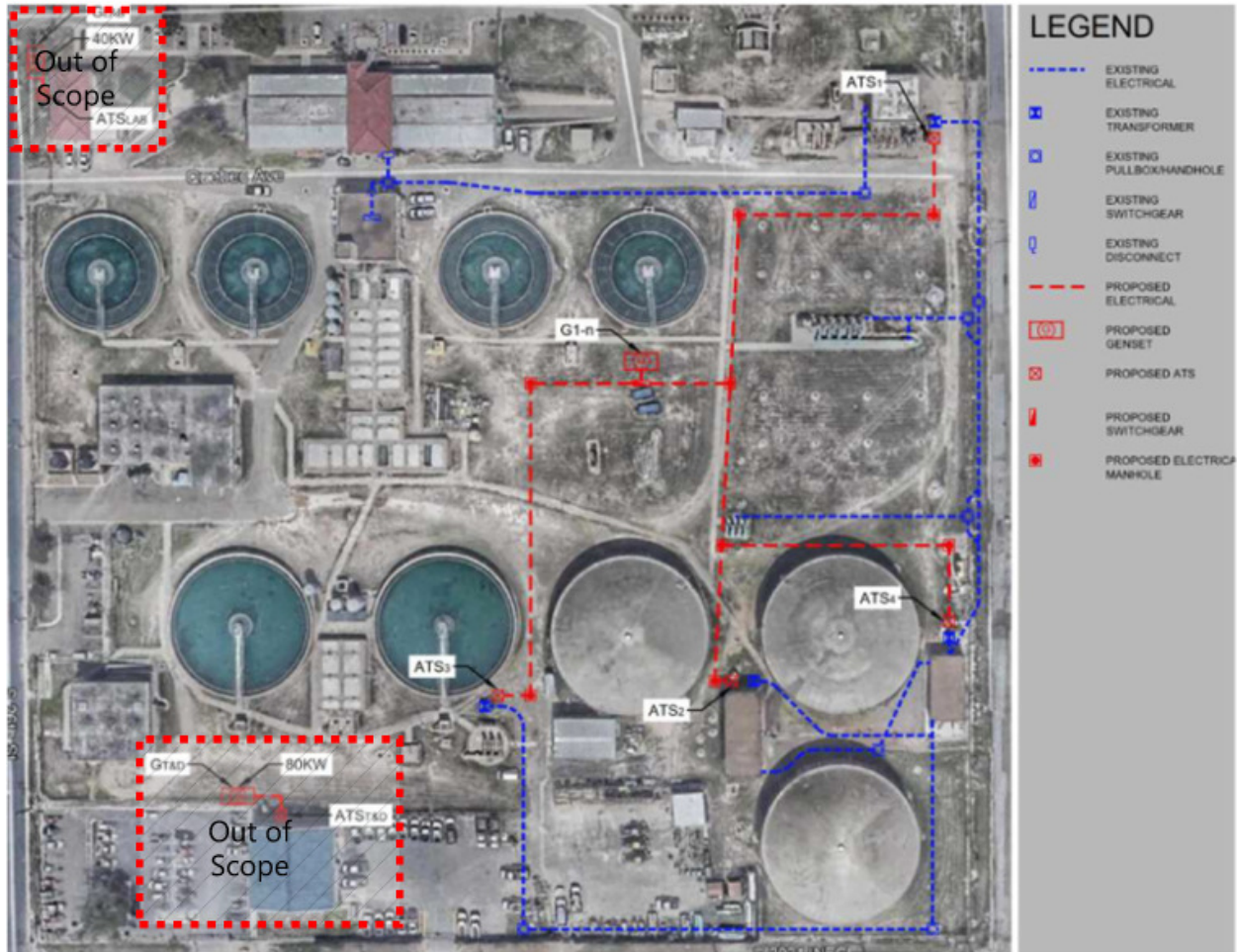
Let's work together to turn our ideas into reality and improve the quality of life in McAllen. If you have any questions regarding any part of this proposal, please don't hesitate to contact me.

Sincerely,  
HALFF

Gabriel Benavides Jr., PE  
Electrical/ICT Team Leader

**SCHEDULE I**

**Scope of Work Exhibit – South Water treatment Plant Site**



From page 17 of 31 in MPU South Water Plant Electrical/Generator Study Conceptual Engineering Report.

Scope of Work Exhibit – Boeye Reservoir Pump Station



*From page 20 of 31 in MPU South Water Plant Electrical/Generator Study Conceptual Engineering Report.*

**TASK 1: Survey Services**

**1. Survey for Design**

This task includes field ties to all surface improvements on the site including field verification of horizontal and vertical data for improvements constructed as part of design requirements specific to the generator upgrades only. This does not include survey of any subsurface facilities. Existing underground structures or utilities will be obtained from record drawings.

**2. Survey Control**

This task includes setting two field control points for contractor to use during construction.

## Survey Services Exclusions

Halff specifically *excludes* the following items from this proposal:

- This proposal does not include research efforts normally performed by a title company.
- Return trips to reset damaged control points or property corners.
- Establishing new easements, rights of way, etc. after the initial completion of the plat.

## **TASK 2: Electrical Engineering Services (WTP)**

### **1. Electrical Site Plan Preparation**

Halff will develop an electrical site plan submittal drawing utilizing civil's layout to locate new conduit ductbanks, new electrical building, and new back-up generator location. The electrical site plan drawing will take control of suggested conduit ductbank routes, elevations, and dimensions.

### **2. Backup Generator Analysis Preparation**

Halff will develop a backup generator analysis to determine the adequate sizing of genset. This will be done with a genset sizing software. This with the understanding that MPU will be accepting a load shedding system that only keeps the most critical electrical loads energized with backup power during utility outages. The most critical loads list will be furnished by MPU to Halff for confirming genset sizing.

### **3. Electrical Power Plans**

Halff will develop electrical power plans detailing the electrical equipment that will be implemented as part of the backup generator upgrades. The power plans will take control of equipment dimensions, working clearances, and location within the facility. The power plans will also incorporate conduit and/or cable tray raceway route layouts.

### **4. Electrical One line Diagrams Preparation**

Halff will develop an existing one-line diagram and a revised one-line diagram. The one-line diagrams will serve as a diagrammatic representation of how the electrical system is interconnected from the utility transformer downstream to the electrical load and how we plan to upgrade it with automatic transfer switches and backup electrical generation.

### **5. Electrical Feeder Design**

Halff will conduct a Nehr-McGrath cabling derating analysis utilizing Amp Calc software to specify underground feeders. The analysis will assure that feeders will operate at or lower than rated cabling temperatures. Voltage drop calculation will be executed to ensure proper voltages at equipment terminals. An electrical feeder schedule with cabling sizes will be provide.

### **6. Electrical Backup Generator Details**

Halff will develop project specific backup generator details. The details will specify generator steps, EPO switches, conduit sub up locations and conduit route layout.



## **7. Electrical Specifications**

Halff will produce Div 26 specifications for the backup genset design.

## **8. Short Circuit Analysis**

Halff will produce a short circuit analysis of the backup power system utilizing SKM power tools software. The analysis will determine new equipment short circuit ratings and arc flash ratings.

### **TASK 3: Controls Engineering Services**

#### **1. Backup Power Generator Load Shed Design**

Halff will specify an electrical load shedding control strategy for the new backup generator system. This will allow for only the most critical electrical loads to remain ON backup power during utility outages. A Critical Power Management System (CPMS) will be specified to obtain generator electrical characteristics that will be utilized for SCADA system interface.

Halff will specify the components and programming requirements needed to interface the new backup power generators with the existing water treatment plants SCADA system. The existing SCADA system will be programmed by others.

#### **2. 15KV Main Switchgear Automation Design**

Halff will specify construction documentation to upgrade existing 15KV main switchgear to be automated with existing SCADA system.

### **TASK 4: Structural Engineering Services**

Structural Assumptions:

The following is a list of assumptions made for the preparation of this fee proposal:

- A site-specific geotechnical report will be provided by Owner to be used for structural design.

#### **1. Backup Generator Structural Foundation Design (WTP)**

Halff will specify the backup generator concrete foundation as per the existing geotechnical report recommendations.

#### **2. New Main Backup Generator Electrical Gear Room Building Structural Design**

Halff will provide detailed structural drawings of a single-story CMU bearing wall building of approximate 200 square feet.

#### **3. New Main ATS Fiberglass building Structural Design**

Halff will provide detailed structural foundation drawings for an estimated quantity 4 of fiberglass buildings that will house the Automatic Transfer Switches.

#### **4. Backup Generator Structural Foundation Design (Boeye Reservoir Pump Station Site)**

Halff will specify the backup generator concrete foundation as per the existing geotechnical report recommendations.

### **TASK 5: Architectural Services**

#### **1. Architecture Plan**

Halff will provide the architectural plans for a proposed 1 story CMU bearing wall building of approximately 200 SF. Construction documents will be provide based on approved modifications required by jurisdictional agency plan checking process and review process.

### **TASK 6: Civil Engineering Services**

#### **1. Civil Site Improvements Final Engineering Design**

##### **Site Grading Plan and Details**

The grading plan includes the notes and details, including spot elevations and details required to allow construction of the new electrical upgrades to site.

##### **Onsite Paving and Dimensional Control Plans and Details**

Geometric dimension control and paving details will be provided. Dimension control will provide coordinate geometry, drive widths and radii. The surface paving section to be utilized will follow the recommendations of the project geotechnical consultant.

##### **Civil Work Specifications**

This task includes preparation of written specification sections for the civil work for the proposed site.

### **TASK 7: Alternate Backup Power Genset Design at S. WTP– Natural Gas Prime Mover**

#### **1. Natural Gas Backup Power Generator System Design**

Halff will specify an alternate fuel type of geneset prime mover or pricing during the early release package. The alternate backup generator type will be a natural gas genset(s). Natural gas engines are larger in footprint and require a natural gas line. The alternate design incorporates a plumbing design to extend a natural gas line to the natural gas generator. The scope of work also includes a natural gas genset specific concrete pad structural design and adjustments to the Civil grading plan.

## **TASK 8: Reimbursable Expenses:**

Direct cost includes printing and reproduction, postage, messenger service, long distance telephone calls and travel. Reimbursable expenses will be billed separately at 1.1 times the direct cost incurred. Estimated reimbursable expenses shown will not be exceeded without your approval. This does not include permitting or review fees required by the agencies. These fees will be provided by the owner.

### **Project Deliverables:**

1. Schematic Design Set. Deliverable will include a early release package with generator specs and automatic transfer switch specs. The early release package will be utilized for Owner procurement of backup generator and associated automatic transfer switch solution.
2. 60% CDs. Deliverable will include an electrical site plan with electrical conduit routes, a civil site plan with paving and an electrical room layout.
3. 90% CDs. Deliverable will include detailed one line diagram, architectural drawings for new electrical room building, and structural foundation details.
4. 100% CDs. All final engineering drawings for bidding phase.

### **Assumptions Made:**

For purposes of developing this professional services proposal we have made the following assumptions.

1. Owner will provide AutoCAD background files of the S. WTP site and Boeye Pump Station Site. Should sub-grade yard piping files be available, Halff would request such files for coordination of new work.
2. Owner will provide available record drawings of the original S. WTP and Boeye Pump station sites. These will be used as reference for preparation our design documentation.
3. Owner will provide an existing geotechnical report for Halff's use in preparation of structural foundation design documentation.

### **Additional Services**

These services must be agreed to by the Engineer and written authorization received from the Owner. Such written authorization must be received within seven (7) days after Engineer's notification of Owner, or Engineer may suspend work on all areas of work effected by the change

The following items are considered Additional Services and will be provided upon request by the Architect:

- A. Design services due to a change in Scope of Basic Services
- B. Design of bid alternates other than the included in the basic scope of services can be provided as requested by Owner.

- C. Construction Administration (CA) services can be provided upon request. CA services includes bid phase support to client, construction phase submittal and RFI reviews, field observation reports, payment application reviews, change order reviews, field directives, and OAC meetings.
- D. Design services due to Change Orders requested by the Owner.
- E. Design services for the development of a value engineering design
- F. Additional project sites not listed in the basic scope of services
- G. Filing fees and permit fees
- H. Additional work outside of site boundaries
- I. As-built documentation
- J. Halff can provide construction staking as required to establish horizontal and vertical control during the construction phase. Construction staking is not included within this scope. Should the owner require construction staking, Halff Associates can provide this service on an hourly basis plus reimbursable items.

**PROFESSIONAL FEE**

Halff Associates will perform the defined Scope of Services as stated above.

Unless otherwise stated, fees quoted in this proposal exclude state and federal sales taxes on professional services. Current Texas law requires assessment of sales tax on certain kinds of surveying services but does not require sales taxes on other professional services. In the event that new or additional state or federal taxes are implemented on the professional services provided under this contract during the term of the work, such taxes will be added to the applicable billings and will be in addition to the quoted fees.

<b>TASK#</b>	<b>FEE AMOUNT</b>
<b>Task #1 - Survey Services Total</b>	<b>\$ 5,900</b>
<b>Task #2 - Electrical Engineering Services Total</b>	<b>\$ 120,000</b>
<b>Task #3 – Controls Engineering Total</b>	<b>\$ 24,000</b>
<b>Task #4 – Structural Engineering Total</b>	<b>\$ 25,250</b>
<b>Task #5 – Architectural Services Total</b>	<b>\$ 15,000</b>
<b>Task #6 – Civil Engineering Services</b>	<b>\$ 12,500</b>
<b>Task #7 –Alternate backup Power Genset Design – Natural Gas prime Mover</b>	<b>\$ 13,000</b>
<b>Task #8 - Reimbursable Expenses</b>	<b>\$ 2,000</b>
<b>Tasks 1 through 8 Totals</b>	<b><u>\$ 217,650</u></b>

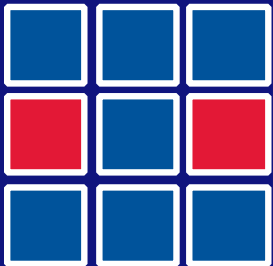
The following rate schedule is shown for estimating purposes of the development of the lump sum fees and for add services fees.

Labor Category	Level	Hourly Rate
<b>Engineer</b>	I	116.17
	II	140.09
	III	179.38
	IV	237.47
	V	310.08
<b>Scientist</b>	I	85.42
	II	131.97
	III	164.01
	IV	206.72
	V	296.41
<b>Surveyor</b>	I	111.04
	II	110.16
	III	145.22
	IV	170.85
	V	239.18
<b>Field Tech</b>	I	63.96
	II	85.28
	III	105.72
	IV	135.75
	V	198.17
<b>Office Tech</b>	I	68.40
	II	85.28
	III	108.39
	IV	134.15
	V	174.26
<b>Administrative</b>	I	67.00
	II	82.00
	III	103.00
	IV	137.00
	V	253.00
<b>Specialist</b>	I	67.52
	II	84.91
	III	106.35
	IV	136.67
	V	236.61
<b>Intern</b>		67.52

## **Appendix A**

RFQ Project No. 04-20-S33-352  
for professional services for the  
South Water Treatment Facility Electrical  
Power Assessment and Generator Study

HALFF



McAllen Public Utilities Board  
South Water Plant  
Electrical/Generator Study  
Conceptual Engineering Report  
McAllen, Texas

Prepared for:



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## PROJECT BACKGROUND

The McAllen Public Utility, along with the City of McAllen continues to experience a significant amount of growth that is expected to continue into the foreseeable future. The growth demands require that MPU evaluate existing utility energy demands and evaluate current backup power capacities at the South Water Treatment Facility. This planning study will be utilized to minimize the potential for future service disruption that might occur in an emergency condition.

# Phase I: SITE SURVEY

## Existing Electrical Conditions

Preliminary engineering site visits were concluded during Phase I of the study to verify and confirm existing electrical conditions including electrical load distribution and electrical equipment nameplate ratings.

The existing site is supplied by 12.47KV incoming underground line from the AEP South McAllen Substation and fed through a 1200A, 15kVA, 23KAIC main switchgear, MSWGR. The power is distributed to four transformers that service different sections of the plant.

Figure 1 illustrates the existing one-line load distribution of the plant.

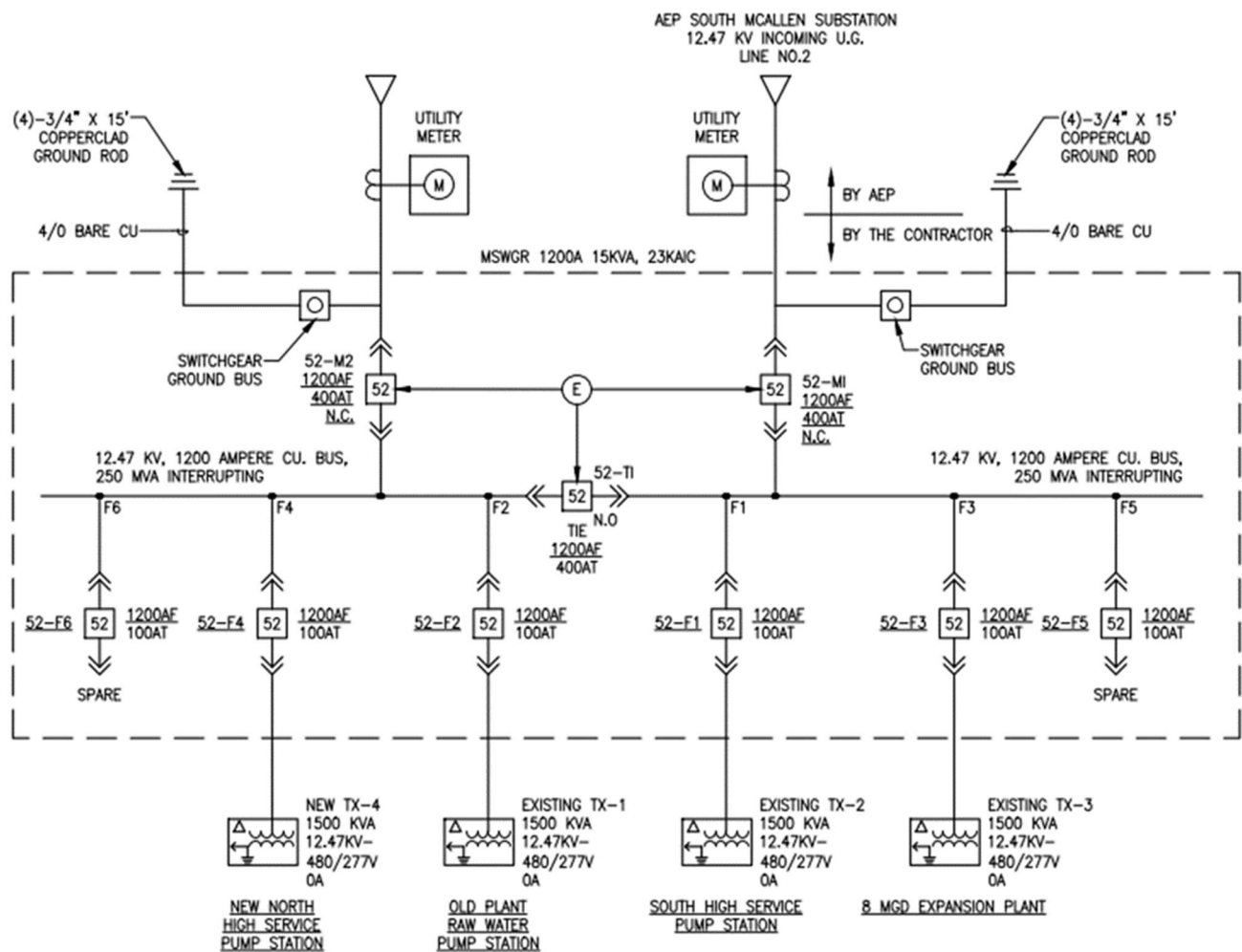


Figure 1: Existing Electrical Distribution – MPU South WTP

Transformer TX-1 is an existing pad mounted, 1500kVA, 12.47kV-480/277v, 3-Phase transformer that services power to the Old Plant Raw Water Pump Station. The load is distributed through a 2000A, 480V, 3-Phase switchboard, SWBD-5, to two motor control centers, MCC-5 and MCC-E, electrical loads to the chemical building and well pump 201.

An existing 300KW diesel standby generator provides backup power to motor control center MCC-E. The following loads were identified to be on backup generator power:

- Main Flocculators
- Backwash Pump #1
- Main Generators
- Raw Water Pump #3
- Main Air Compressors
- Main Dryers
- Main Administration/Fitter Building
- Emergency Lighting and General Power

Figures 2 and 3 illustrate the one-line load distribution of Transformer TX-1 and MCC-E.

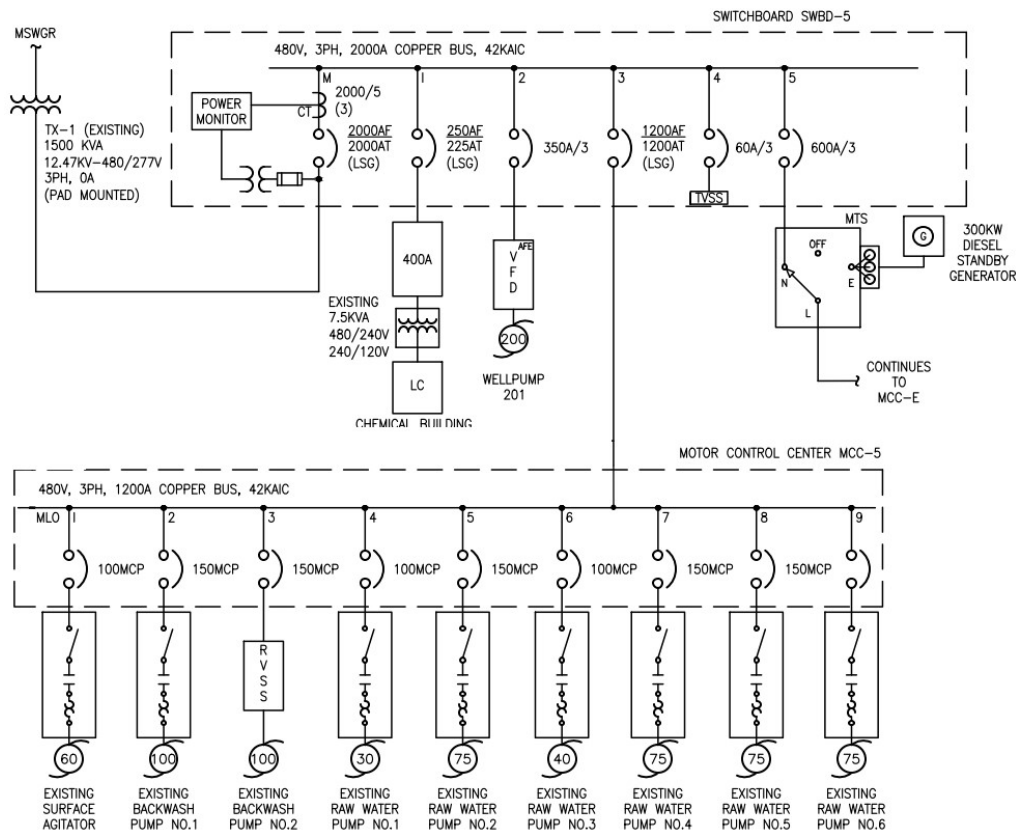


Figure 2: Transformer TX-1 One Line Diagram

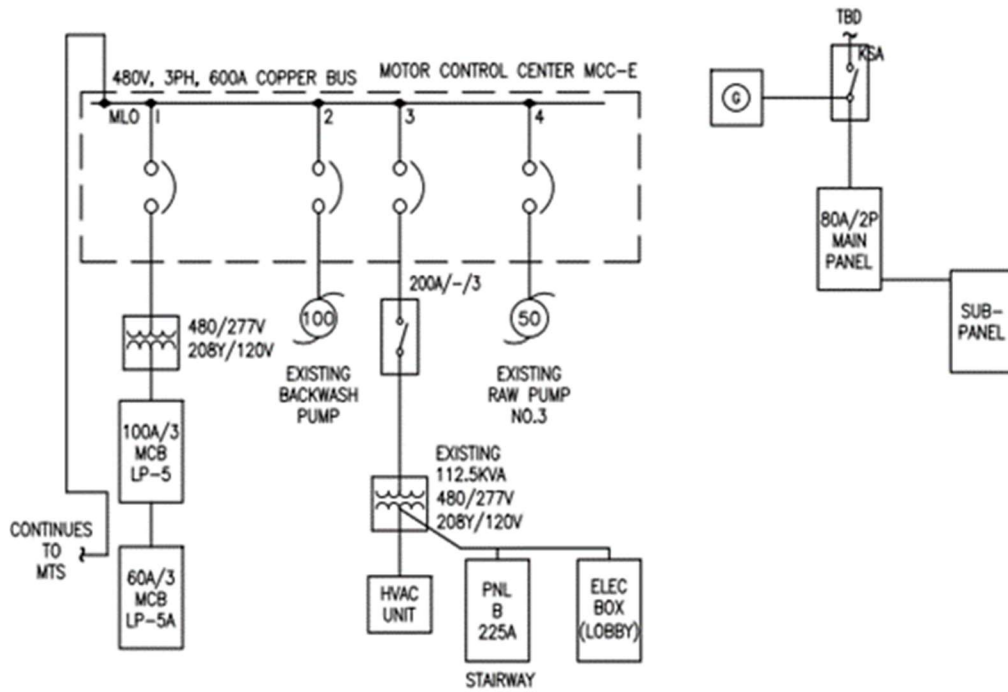


Figure 3: MCC-E One Line Diagram

Transformer TX-2 is an existing pad mounted, 1500kVA, 12.47kV-480/277v, 3-Phase transformer that services power to the South High Service Pump Station.

Figures 4 illustrates the one-line load distribution of Transformer TX-2.

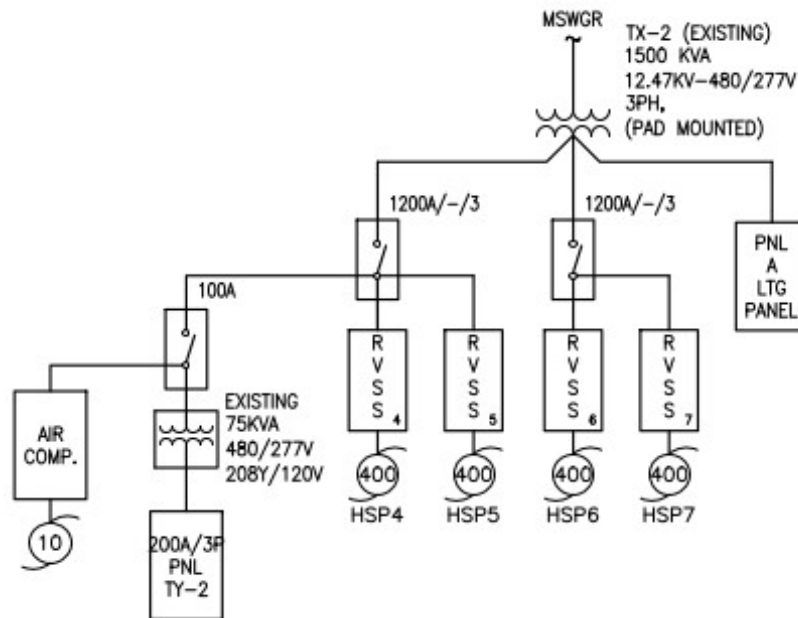


Figure 4: Transformer TX-2 One Line Diagram

Transformer TX-3 is an existing pad mounted, 1500kVA, 12.47kV-480/277v, 3-Phase transformer that services power to the 8 MGD Expansion Plant. The load is distributed through two independent 500A disconnect switches that each serve independent loads as illustrated in the one line diagram of Figure 5.

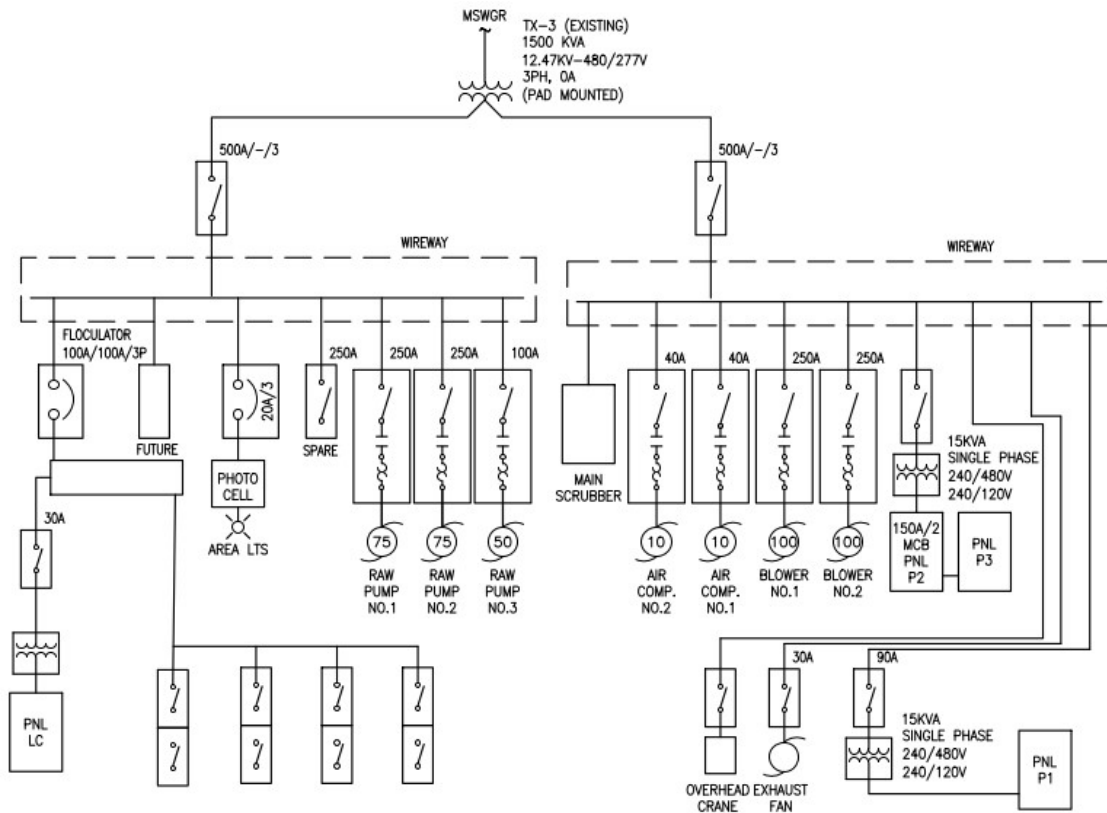


Figure 5: Transformer TX-3 One Line Diagram

Transformer TX-4 is an existing pad mounted, 1500kVA, 12.47kV-480/277v, 3-Phase transformer that services power to the New North High Service Pump Station. The load is distributed through a 2000A, 480V, 3-Phase switchboard, SWBD-4, to motor control center, MCC-4, electrical loads to three high service pumps and emergency loads on Panel EDP.

An existing 266KW diesel standby generator provides backup power to critical loads on emergency distribution panel EDP. The following loads were identified to be on backup generator power:

- High Service Pump #8
- High Service Pump Flow Metering
- Emergency lighting and general power

Figure 6 illustrates the one-line load distribution of Transformer TX-4.

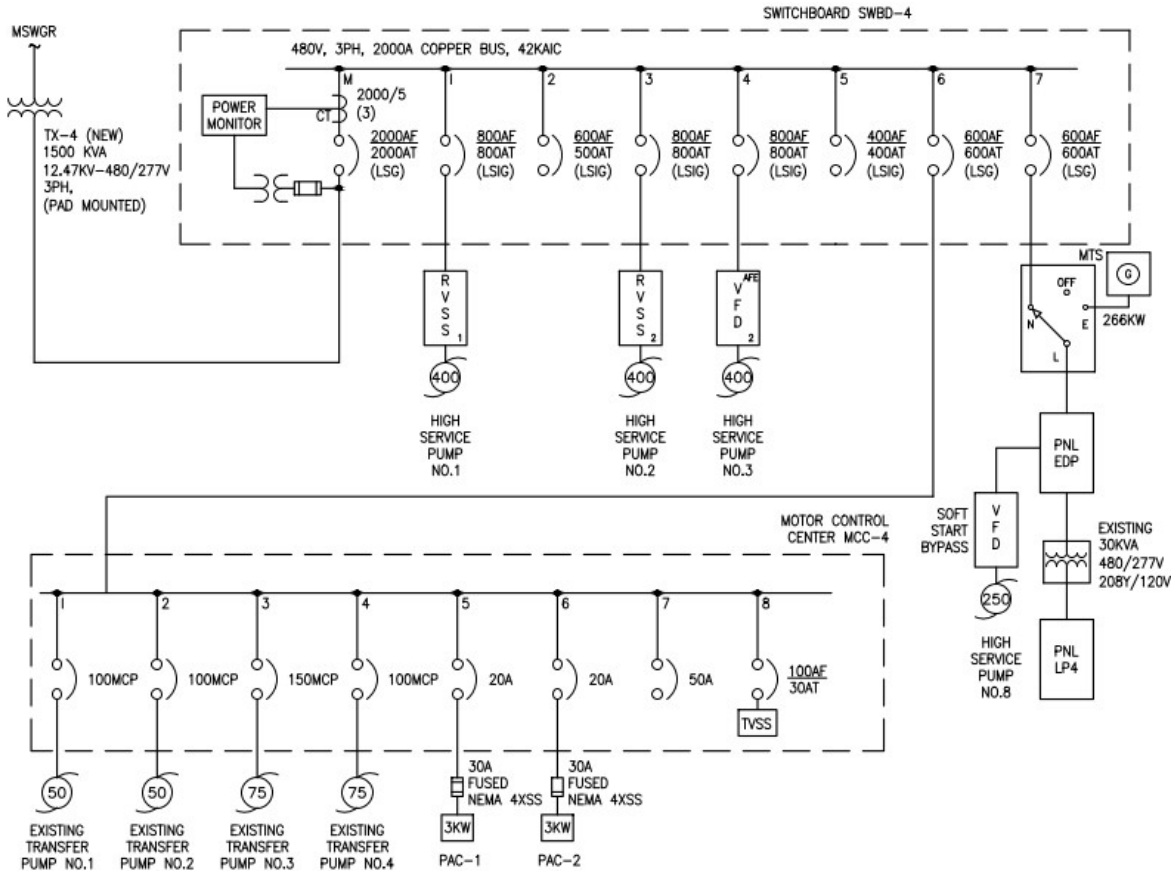


Figure 6: Transformer TX-4 One Line Diagram

There are two additional buildings on site that have their own independent utility service and meter. The lab building is serviced by a 25kVA 240/120V pole mounted utility transformer. Figure 7 illustrates the one line service distribution to this building.

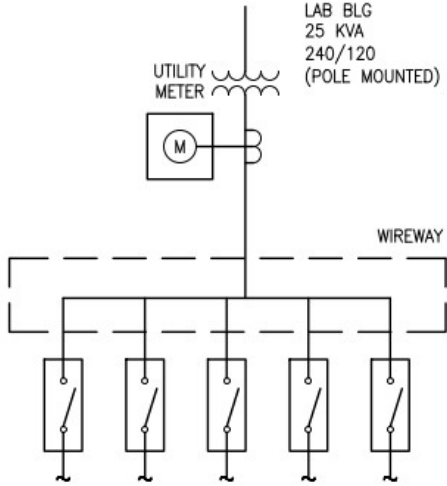


Figure 7: Lab Building One Line Diagram

The transmission and distribution building is serviced by a 75kVA, 12.47kV – 208/120V, utility transformer. Figure 8 illustrates the one line service distribution to this building.

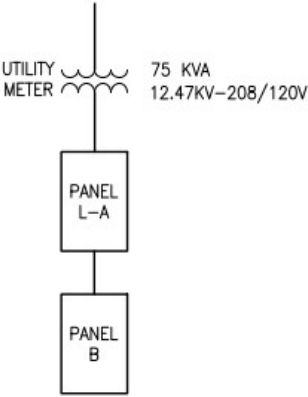


Figure 8: Transmission & Distribution Building One Line Diagram

A load analysis was performed based on existing loads to determine the overall load capacity of the plant. Table 1 contains the total load analysis for the entire plant, minimum and peak demands, as well as the load demand on each of the four transformers.

Load Analysis and Demand Data				
	HP	kW	kVA	Amps
<b>Entire Plant Running Demand</b>	4,905	3,661	4,576	5,504
<b>Peak Running Demand</b>	4,026	30,004	3,755	4,517
<b>Minimum Running Demand</b>	1,730	1,291	1,614	1,941
<b>Transformer TX-1</b>	1,047	782	977	1,175
<b>Transformer TX-2</b>	1,685	1,257	1,572	1,891
<b>Transformer TX-3</b>	460	343	429	516
<b>Transformer TX-4</b>	1,713	1,278	1,598	1,922

Table 1: MPU SWTP Load Analysis and Demand Data



The existing site and its current electrical distribution infrastructure layout can be seen in Figure 9.






<b>Legend</b>	
	<b>ELECTRICAL DISTRIBUTION PAD MOUNT TRANSFORMER</b>
	<b>ELECTRICAL DISTRIBUTION POLE MOUNT TRANSFORMER</b>
	<b>TRANSFORMER</b>
	<b>EXISTING ELECTRICAL DISTRIBUTION GENERATOR</b>
	<b>PLANT &amp; EQUIPMENT ON EMERGENCY POWER</b>
	<b>* HSP 9 HAS DIESEL MOTOR</b>



Figure 9: MPU SWTP Site Layout

## Generator Specification and Potential Locations

Preliminary analysis of the existing site conditions also included an evaluation of diesel versus natural gas generators and potential location considerations.

Emergency generators are power generating machines comprised of an engine, also known as the prime mover, an alternator, control panel, and a fuel tank. During utility power outages, the standby generator keeps the critical building systems in operation by automatically starting within seconds of utility power loss. Emergency generators are available in many various sizes, fuel types, reliability levels, and application housings.

Diesel engine generators are the most cost effective and can take on highly inductive motor loads much smoother than natural gas engines. They have a smaller footprint than their natural gas counterpart and are the most energy efficient generators on the market. Diesel generators have been found to be the most reliable to start in water plant facility functions, have a longer life span and are safer due to diesel fuel being less flammable. However, the diesel generator does contain some attributes that can be considered as drawbacks depending on the needs of the end user. Diesel generator fuel must be utilized due to its degradation over time. Fuel must be supplied for genset engine bi-weekly exercise and for backup power requirements. Diesel fuel is not as clean as it's natural gas counterpart and diesel generators are noisier than other fuel type generators.

Natural gas engine generators utilize cleaner fuel that it is utility serviced with and have the added benefit of not producing a pungent fuel odor during start-up. However, these generator types are largely expensive for water treatment facilities with large electrical motor loads. Unlike their diesel counterpart, they are not as smooth to take on large inductive loads. Natural gas generators are dependent on gas utility to be available and operational. However, they can also be serviced by liquid propane fuel tanks. Natural gas is largely explosive and poses a higher degree of danger to personnel. In addition, natural gas generators are known to emit more greenhouse gases into the environment.

Various possible locations where identified on site and can be seen in Figure 10 below.







<b>Legend</b>	
	<b>ELECTRICAL DISTRIBUTION PAD MOUNT</b>
	<b>TRANSFORMER</b>
	<b>ELECTRICAL DISTRIBUTION POLE MOUNT</b>
	<b>TRANSFORMER</b>
	<b>EXISTING ELECTRICAL DISTRIBUTION GENERATOR</b>
	<b>POSSIBLE LOCATIONS FOR NEW GENERATORS</b>



Figure 10: Possible Locations for New Generators

Because natural gas generator sets are in consideration as a viable option, the gas line availability around the plant facility was identified and can be seen in Figure 11 for consideration.

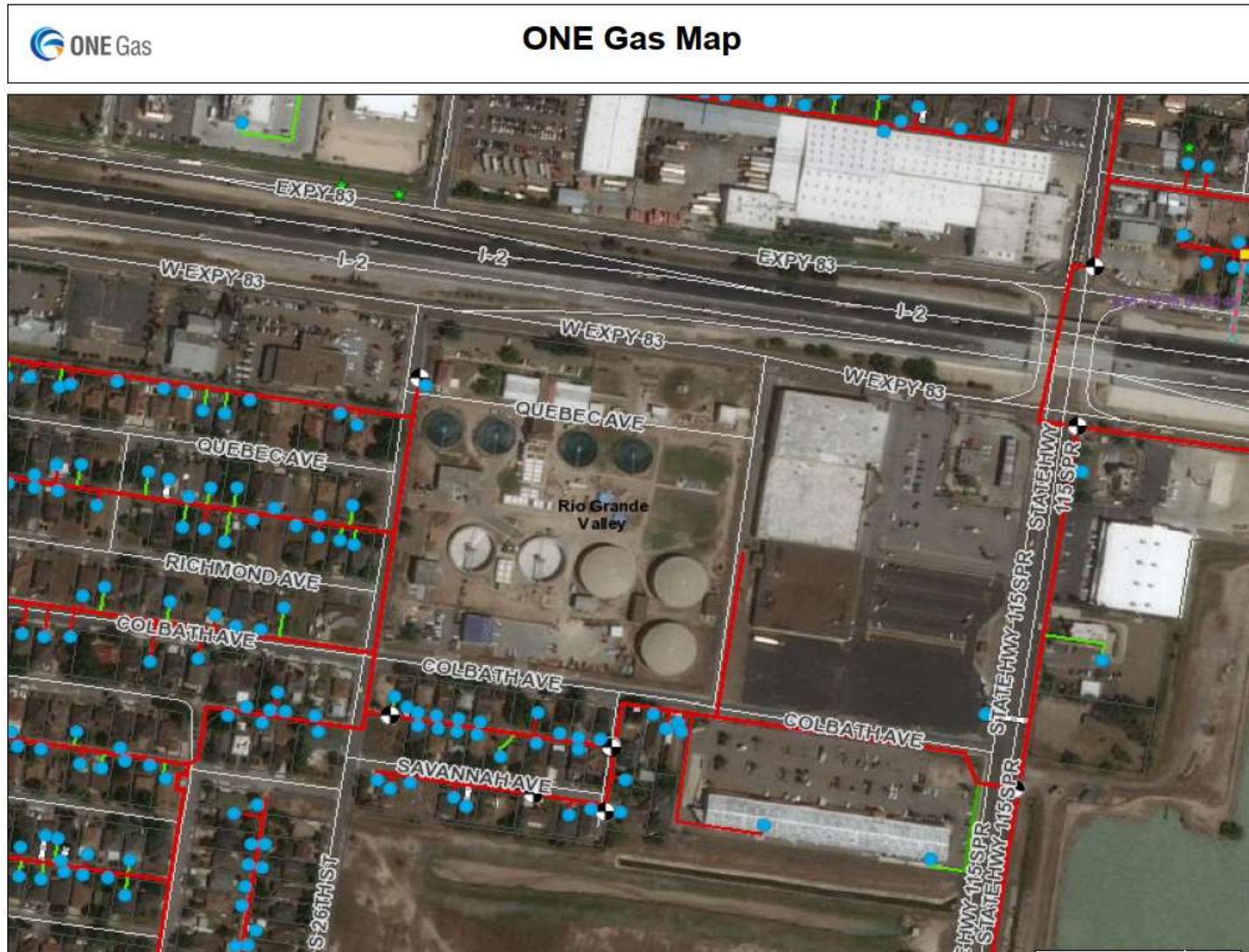


Figure 11: Natural Gas Line Availability

## Phase II: PRELIMINARY DESIGN PLANNING

### Standby Generator Options

Existing conditions at the Southwest Water Treatment plant do not provide backup power to all facility loads. Because not all electrical loads are connected to the backup system, loss of facility function and operation is unavoidable during a power outage. Depending on the cause and severity, such as a natural disaster, this loss of facility function and operation could significantly hinder the operations of this facility over an extended period of time, severely impacting the end user.

The goal of this study is to provide standby generator options that would allow for 100% backup of the Southwest Water Treatment Plant, the Old 10<sup>th</sup> Street Pump Station and the replacement of the 15kV Switchgear battery bank.

## Southwest Water Treatment Plant GenSet Options

There are two viable options for consideration to provide 100% backup to the Southwest Water Treatment Plant.

### CENTRALIZED PARALLELED GENSET OPTION

The first option consists of using a centralized paralleled approach. In this approach, the gensets would be connected in a paralleled configuration as shown in Figure 12 and routed through a 2000A, 480/277V, 3-Phase emergency switchboard. Electrical loads would automatically be transferred over to the back-up power system during power failure through four new automatic transfer switches.

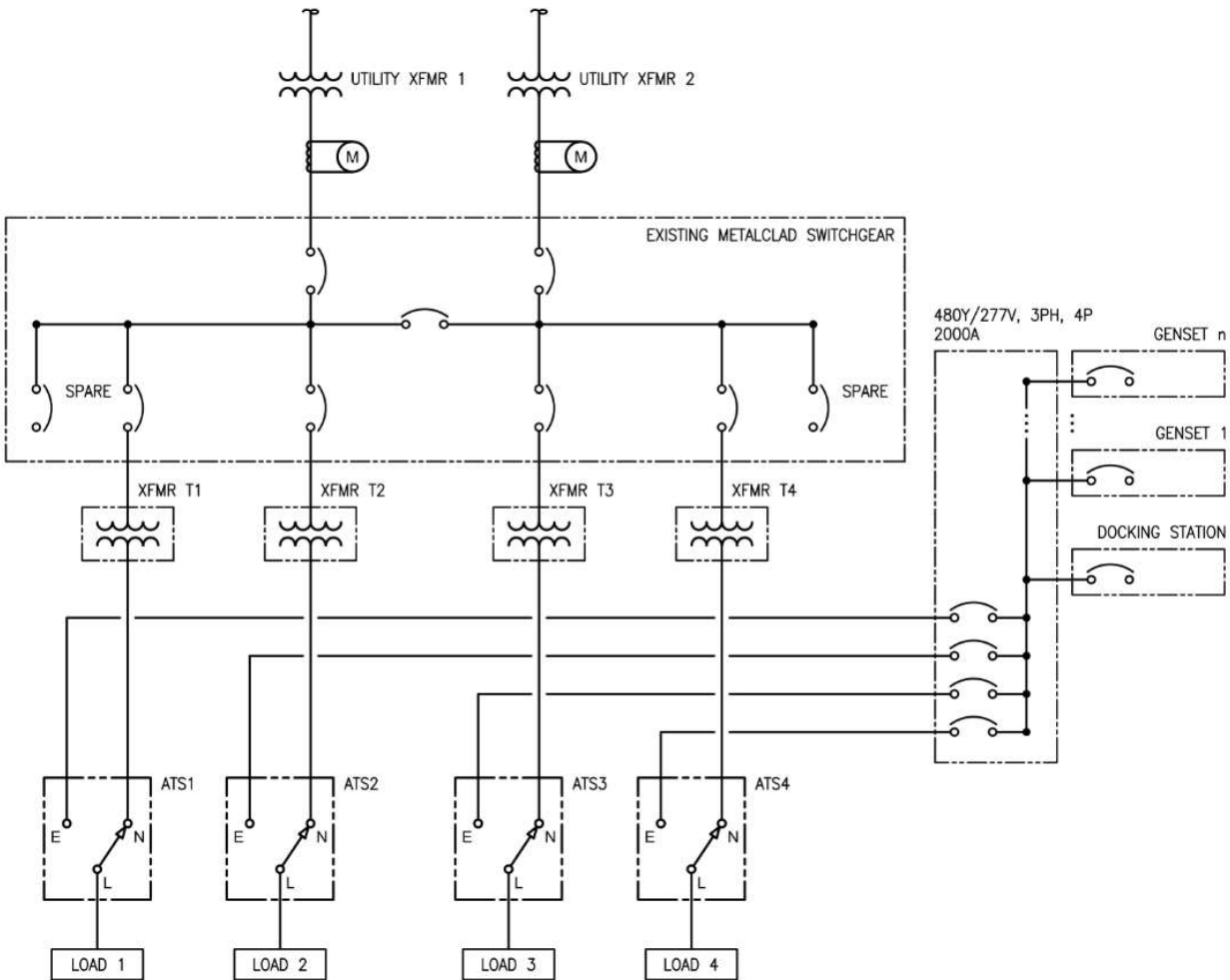


Figure 12: Centralized Paralleled GenSet One-Line Diagram

As discussed in Phase I, there are various options for the type of generators that can be used. A generator sizing analysis was completed to determine the genset sizing requirement for each configuration.

In the case of diesel generators, three 1500kW paralleled gensets would be required to meet the load requirements of the facility.

If natural gas generators are used, then five 2000kW paralleled gensets would be required to meet the load requirements of the facility.

In the case of a third diesel microgrid option type, eight 625kW paralleled gensets would be needed to meet the facility load requirements.

Figure 13 illustrates the site layout for a centralized paralleled genset approach and includes locations for the generators, emergency switchboard and transfer switches as well as the duct bank routing.

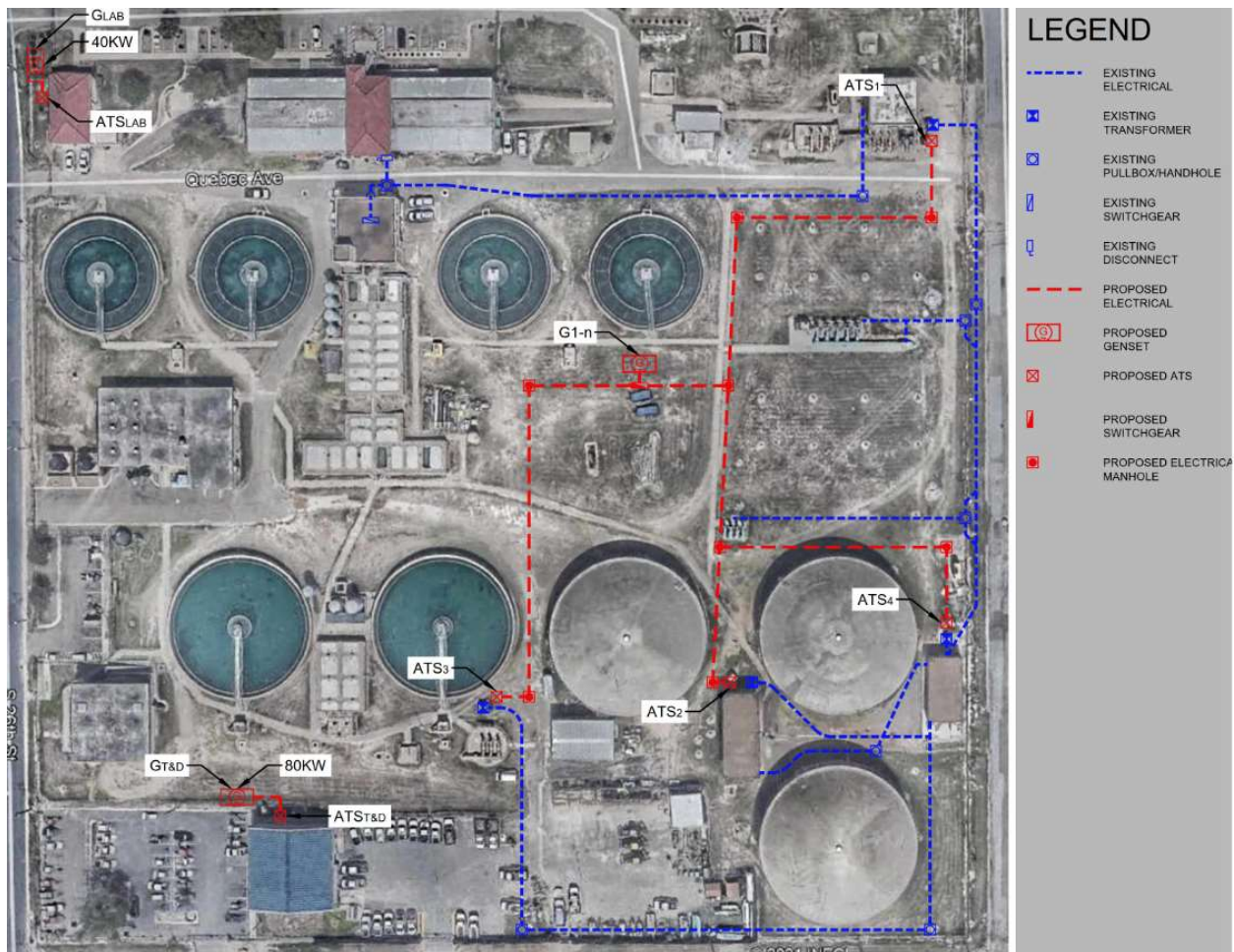


Figure 13: Centralized Paralleled Genset Site Layout

*DISTRIBUTED GENSETS OPTION*

The second option consists of using a distributed genset approach. In this approach, each of the four transformers would have emergency backup power available through a dedicated genset as shown in Figure 14.

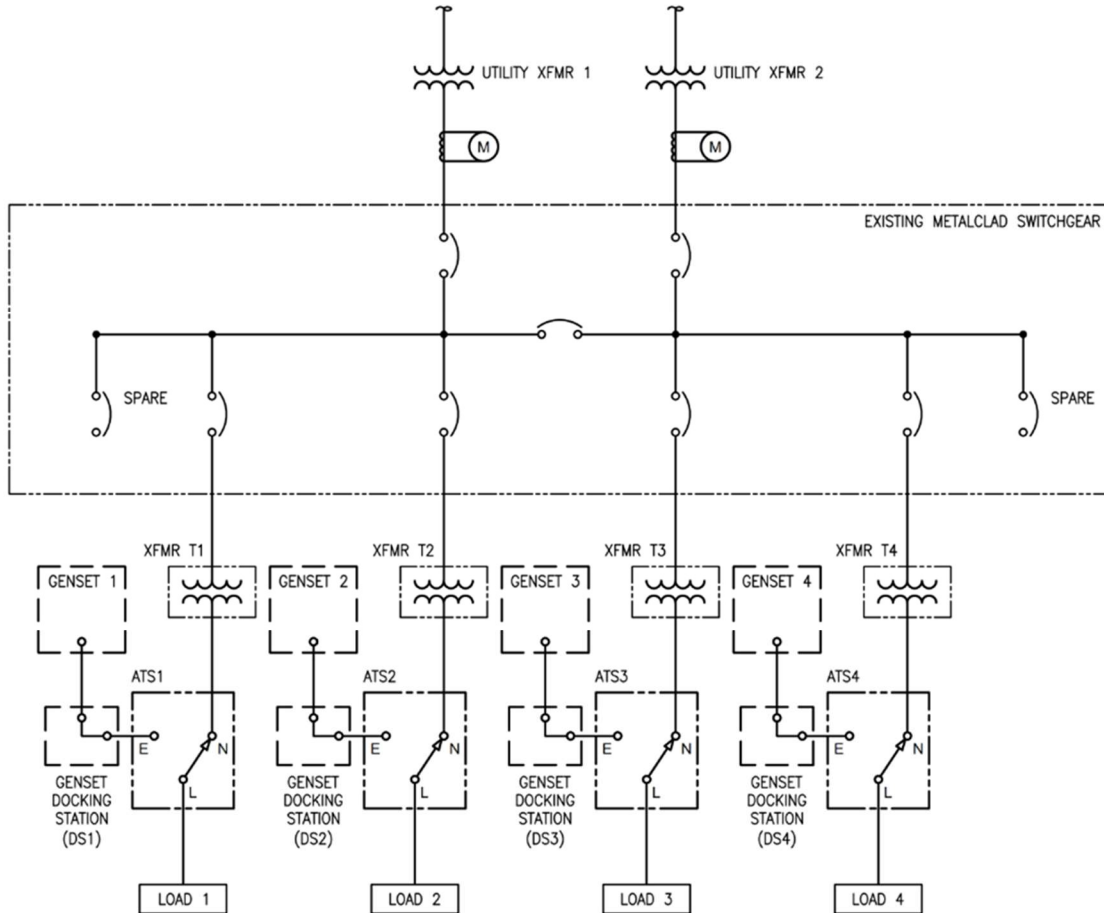


Figure 14: Distributed GenSet One-Line Diagram

A generator sizing analysis was completed to determine the genset sizing requirement for each load under this option.

For Transformer TX-1 (Load 1), one 1,250kW diesel genset or two 625kW paralleled natural gas gensets would be required to meet the emergency load demand at this transformer.

In the case of Transformer TX-2 (Load 2), one 2,000kW diesel genset or two 1,000kW paralleled natural gas gensets would be required to meet the emergency load demand at this transformer.

Transformer TX-3 (Load 3), would require one 750kW diesel genset or one 750kW natural gas genset to meet the emergency load demand.



And in the case of Transformer TX-4 (Load 4), three options are available. Either one 2,000kW diesel genset or two 1,000kW paralleled natural gas gensets would be required to meet the load demand at this transformer. A third option of two paralleled diesel microgrid gensets is also available for this load. Using this diesel microgrid generator type, two paralleled 1250kW and two paralleled 1875kW microgrid generators would be needed to meet the load demand at this transformer.

The lab building load can be supplied through either a 40kW diesel or natural gas genset or through an 88kW battery storage with 41 hours of minimum run time.

The T&D building load can be supplied through either an 80kW diesel or natural gas genset or through an 88kW battery storage with 19 hours of minimum run time.

Figure 15 illustrates the site layout for a distributed genset approach and includes locations for the generators and transfer switches as well as the duct bank routing.

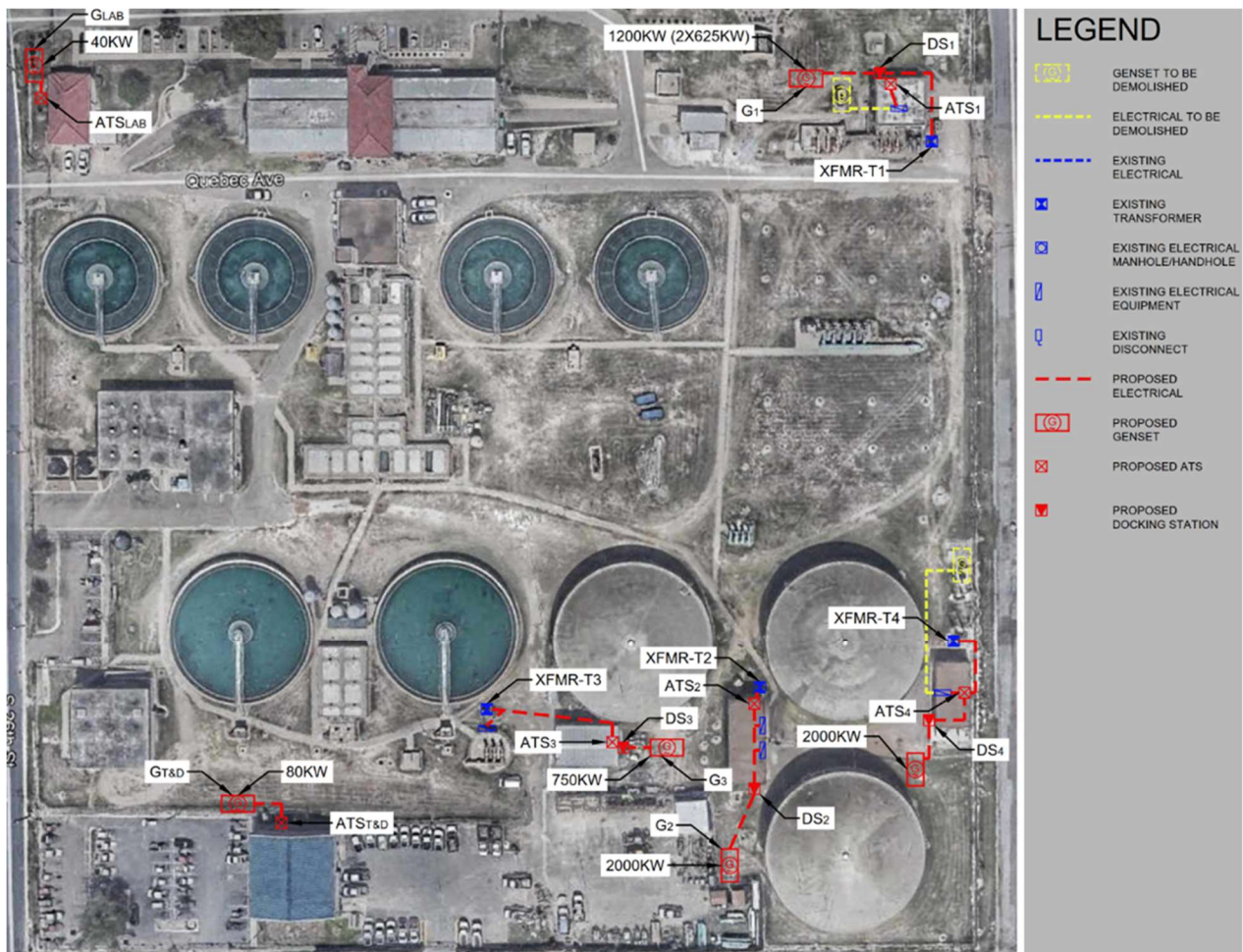


Figure 15: Distributed Genset Site Layout

### New Boeye Reservoir Pump Station GenSet Options

A generator sizing analysis was also completed on the New Boeye Reservoir Pump Station in order to look at options to provide full back up power to this site as well. Generator sizing options for this site include either a 350kW diesel or natural gas genset to meet the load requirements for the entire site.

Figure 16 illustrates the site layout for the New Boeye Reservoir Pump Station and includes locations for the generator and transfer switches as well as the duct bank routing.



Figure 16: New Boeye Reservoir Pump Station Site Layout

The natural gas line availability around the pump station was identified and can be seen in Figure 17 for consideration.

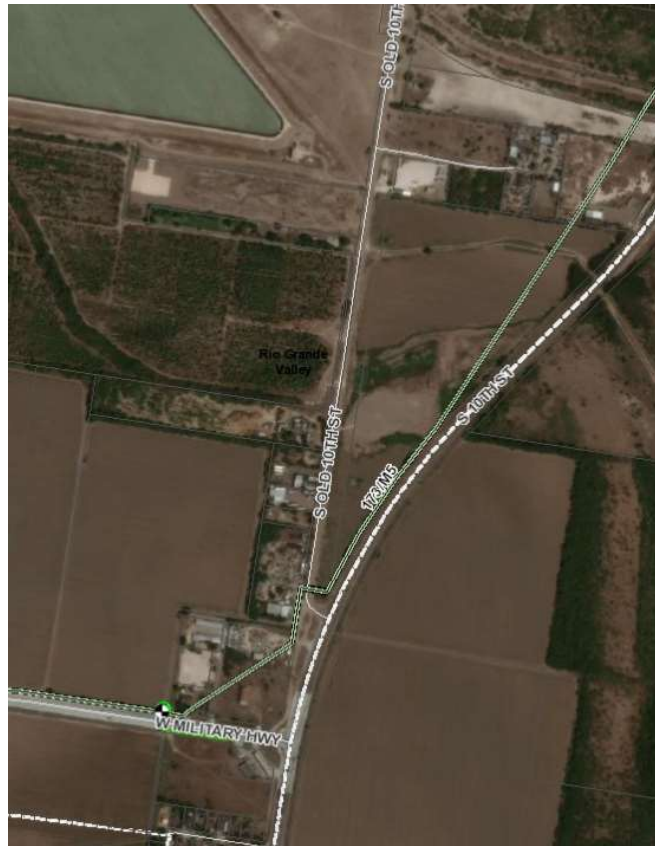


Figure 17: Gas Line Availability – New Boeye Reservoir Pump Station

### 15kV Switchgear

An evaluation of the implementation of utility to generator automatic switchover at the existing 15kV switchgear was completed to allow automatic startup of backup power without the need of manual transfer by personnel. The evaluation concluded the need for replacement of the battery bank and charging system. In addition, switchgear modifications are required to provide SCADA supervision, control and automation.

### SCADA Interface Options

Monitor source switching via SCADA includes configuration of existing relays and the PowerLogic control system, the development of the communication address map with customer SCADA and the conversion of TCP/IP to Ethernet/IP.

Monitor and control source switching via SCADA includes configuration of existing relays and the PowerLogic control system, the development of the communication address map with customer SCADA, the conversion of TCP/IP to Ethernet/IP and installation of a Remote/Local Selector switch.

Monitor and automation control source switching via SCADA includes configuration of existing relays and the PowerLogic control system, the development of the communication address map with customer

SCADA, the conversion of TCP/IP to Ethernet/IP and installation of operator interface and implementation of a PLC-based auto transfer scheme.

## OPCC

Preliminary construction cost estimates including all required electrical work and equipment are outlined below.

- Centralized Paralleled Gensets Options:
  - Diesel ..... \$5.6M \*
  - Natural Gas ..... \$7.3M \*\*
  - Diesel MicroGrid ..... \$6.0M \*
- Distributed Gensets Options:
  - Diesel..... \$5.7M \*
  - Natural Gas ..... \$6.6M \*\*
  - Diesel MicroGrid ..... \$7.1M \*
- Lab Building Options:
  - Diesel ..... \$119k \*
  - Natural Gas ..... \$114k \*\*\*
  - Battery Storage ..... \$845k
- T&D Building Options:
  - Diesel ..... \$143k \*
  - Natural Gas ..... \$140k \*\*\*
  - Battery Storage ..... \$845k
- Old 10<sup>th</sup> St Pump Station Options:
  - Diesel ..... \$379k \*
  - Natural Gas ..... \$531k \*\*\*\*
- 15 kV Switchgear Battery Bank Replacement ..... \$34k
- 15kV Switchgear Modifications:
  - SCADA Supervision ..... \$54k
  - SCADA Control ..... \$67k
  - SCADA Automation ..... \$130k

\* Includes 72-hour fuel tank costs

\*\* Includes \$270k in costs to upgrade and extend natural gas utility lines required for load.

\*\*\* No natural gas utility upgrade required.

\*\*\*\* Includes \$120k in costs to extend natural gas utility line to load.

Annual fuel and maintenance cost estimates including fuel for testing and maintenance are included below for consideration.

- Centralized Paralleled Gensets Options:
  - Diesel ..... \$24k
  - Natural Gas ..... \$33k
  - Diesel Microgrid ..... \$55k
- Distributed Gensets Options:
  - Diesel..... \$30k
  - Natural Gas ..... \$27k
  - Diesel Microgrid ..... \$55k
- Lab Building Options:
  - Diesel ..... \$3k
  - Natural Gas ..... \$3k
  - Battery Storage ..... \$3k \*
- T&D Building Options:
  - Diesel ..... \$3k
  - Natural Gas ..... \$3k
  - Battery Storage ..... \$5k \*
- Old 10<sup>th</sup> St Pump Station Options:
  - Diesel ..... \$5k
  - Natural Gas ..... \$5k
- 15 kV Switchgear Battery Bank Replacement ..... \$6k \*
- 15kV Switchgear SCADA Integration: ..... \$0 \*\*
- 15kV Switchgear Equipment: ..... \$10k \*\*\*

\* Annual cost for commissioning, training, and 10-year maintenance agreement.

\*\* Virtually no costs for maintaining PLC for SCADA Integration other than occasional firmware upgrades.

\*\*\* Annual cost for maintenance agreement for maintaining switchgear.

Maintenance items required for generators include the following:

- Visually inspect the site and equipment
- Gas Engine – inspect and adjust ignition system, and plugs
- Diesel Engine – inspect injection system and pump
- Inspect fuel system including day tank, (if applicable)
- Replace (standby applications only) engine fuel filters annually, (if applicable)
- Inspect and clean as needed dry type air cleaner element, or clean and refill oil bath type air cleaner.
- Check block heater operation
- Inspect cooling system for pressure leaks, verify antifreeze protection to a strength of 50% antifreeze and 50% water
- Replace coolant filter, (if applicable)
- Grease accessory drives and/or generator as necessary
- Inspect and adjust engine fan belts as necessary
- Inspect engine exhaust system for leaks or corrosion; check condensation trap and muffler condition

- Check oil level, start unit, warm up and check and record oil pressure
- Inspect starting system including batteries, cables, battery charger, alternator and record battery specific gravity reading
- Inspect engine and generator control functions and time delays as applicable
- Inspect all instruments for proper operation
- Adjust frequency and voltage as required
- Inspect and clean, (if applicable) generator slip rings and brushes
- Inspect automatic switch(s) for proper operation which includes time delays and exercisers where possible
- Test run generator, loaded where possible and record readings
- Change all lube oil and applicable filter elements annually
- Lube oil furnished at location by WPI
- Fill antifreeze as needed (as associated with normal evaporation/loss), furnished at location by WPI
- Provide a written report after each inspection or repair call detailing any conditions found and advising further service required, in any, to promote operating dependability of the system

It is important to note that the differences in pricing between diesel and natural gas can be attributed to extra filters, such as fuel, oil, or oil bypass filters. Also, diesel units will come with water separators. Typically, a natural gas unit will have one filter versus six on a diesel generator. In some cases, natural gas engines are smaller requiring less oil. Inspection is the same on diesel or natural gas generators.

# Phase III: VIABILITY OF DEMAND RESPONSE BACKUP POWER

## Demand Response Generator Option Analysis

Demand Response Generators are like traditional generators except they are modified specifically for providing demand response for the utility grid. Demand response allows the utility company to turn your generator on and off for short periods of time during specific times of the day. This phase of the study incorporates the general analysis of a demand response generator option.

The following information outlines generator sizing and cost estimates for the Southwest Water Treatment Plant utilizing centralized paralleled genset configurations.

### Generator Sizing:

- Centralized Paralleled Gensets for 100% Plant Output Options:
  - Diesel ..... 3 – 1500kW Paralleled Gensets
  - Natural Gas ..... 5 – 1000kW Paralleled Gensets
- Centralized Paralleled Gensets for 75% Plant Output Options:
  - Diesel ..... 4 – 1000kW Paralleled Gensets
  - Natural Gas ..... 4 – 1000kW Paralleled Gensets
- Centralized Paralleled Gensets for 75% Plant Output with Soft Starts Options:
  - Diesel ..... 3 – 1250kW Paralleled Gensets
  - Natural Gas ..... 4 – 1000kW Paralleled Gensets

### Preliminary Construction Cost Estimates including all required electrical work and equipment:

- Centralized Paralleled Gensets 100% Plant Output Options:
  - Diesel ..... \$5.6M \*
  - Diesel ..... \$6.1M \*\*
  - Natural Gas ..... \$7.0M \*\*\*
- Centralized Paralleled Gensets 75% Plant Output Options:
  - Diesel ..... \$5.3M \*
  - Diesel ..... \$5.8M \*\*
  - Natural Gas ..... \$6.6M \*\*\*
- Centralized Paralleled Gensets 75% Plant Output with Soft Starts Options:
  - Diesel ..... \$5.4M \*
  - Diesel ..... \$5.9M \*\*
  - Natural Gas ..... \$6.6M \*\*\*

\* Costs includes 72-hour fuel tank costs.

\*\* Costs include adder for Tier-4 Certification for Demand Response.

\*\*\* Costs includes \$270k in costs to upgrade and extend natural gas utility lines required for load.

## Local Demand Response Programs

### *ERCOT EMERGENCY RESPONSE SERVICE (ERS)*

ERCOT procures Emergency Response Service (ERS) by selecting qualified loads and generators (including aggregations of loads and generators) to make themselves available for deployment in an electric grid emergency. ERS decreases the likelihood of system-wide load shedding by paying qualified scheduling entities (QSE) to make arrangements with residential, commercial and industrial participants to either reduce consumption or increase generation across the grid when called upon by ERCOT. These participants are required to provide an agreed-upon number of megawatts (MW) within ten to thirty minutes to help prevent or alleviate an actual or anticipated Energy Emergency Alert (EEA) event. ERCOT procures ERS four times during the ERS calendar year which begins with December and ends in November. The Standard Contract Terms (SCT) are as follows: December-March, April-May, June-September and October-November. For each SCT ERCOT procures ERS according to two different response times—thirty minutes ("ERS-30") and ten minutes ("ERS-10"). This is a statewide program administered by ERCOT. Participants receive an annual capacity payment of approximately \$25,000. Participation if called upon is mandatory and it does not require a National Emission Standards for Hazardous Air Pollutants (NESHAP) generator.

### *4 COINCIDENT PEAK MANAGEMENT*

The 4CP program is aimed at enabling participating members to reduce transmission and distribution charges from their transmission and distribution service providers ("TDSP"). This is achieved by curtailing load during each of ERCOT's four 15-minute coincident peak events that occur during the summer months of June, July, August and September. Through this program the member tries to avoid using electric power during the same time the Texas market is experiencing peak demand for power. Members cannot have eligible accounts participate in this program if they are also participating in an Emergency Response Service ("ERS") program. 4CP avoidance is voluntary and requires a NESHAP compliant generator. Participants save approximately \$30,000 of annual 4CP savings.

### *GEXA ECONOMIC DEMAND RESPONSE*

This is a program specific to Gexa. During high priced periods, Gexa calls on customer to reduce load during a specific time of day. If the customer responds, Gexa will take the positive difference of the Index Price avoided during the turn-down and the contracted fixed price and splits the proceeds at a 50/50 percent distribution. Participation in each event is voluntary and requires a NESHAP compliant generator. McAllen receives approximately \$25,000 of annual EDR proceeds through this program.



Figure 19 illustrates the demand levels where ERCOT calls on participants of demand response programs.

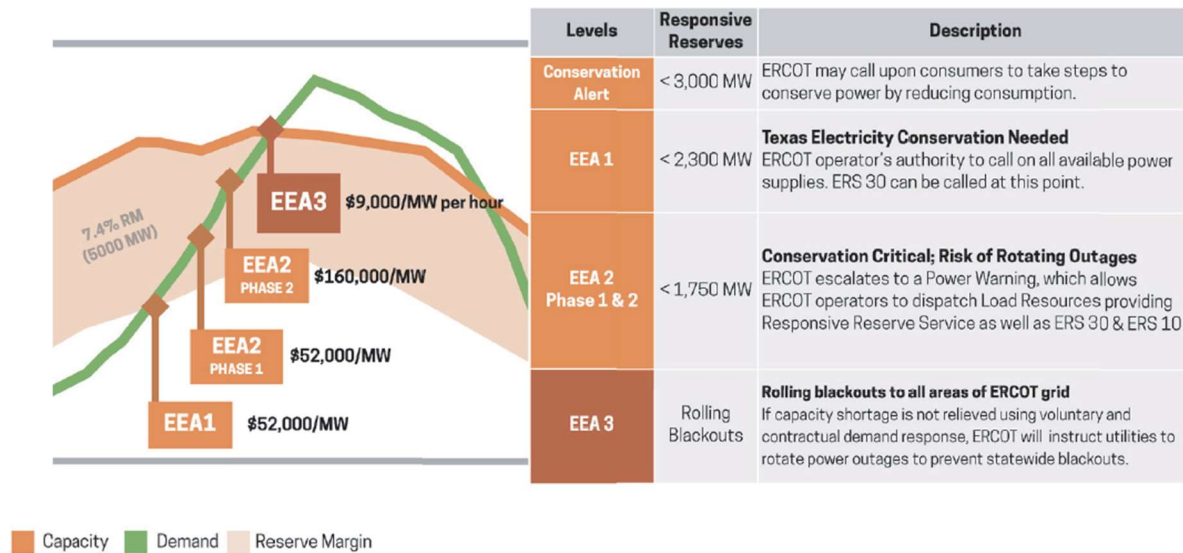


Figure 19: ERCOT Demand Response Levels

Details for Demand Response Programs:

- I. Emergency Response Service (ERS10, ERS30):
  - A. Based on historical usage data, 0.5MW can be enrolled in ERS program.
  - B. Potential revenue from ERS program – approximately \$25k/year.
  - C. Historically, ERCOT has called upon participants once every four years.
  
- II. Four Concurrent Peak Management (4CP):
  - A. Based on historical usage data, 0.75MW can be enrolled in CP program.
  - B. Based on \$200/MW strike price and 140 hours/year, potential revenue from 4CP program – approximately \$30k/year.
  - C. Peak curtailment occurs four times per year in June, July, August, and September.
  
- III. Gexa Economic Demand Response:
  - A. Based on \$200/MW strike price and 140 hours/year, potential revenue from EDR program – approximately \$25k/year.
  - B. Peak curtailment occurs four times per year in June, July, August, and September.
  
- IV. Above Demand Response Programs:
  - A. MW enrolled in program is based on historical average demand over a five-year period.
  - B. Capital Investment of approximately \$35k required for multi-meter installation.
  - C. Tier 4 Certification for Diesel Generators will increase price of diesel generators approximately 50%.

- V. Enrollment in Demand Response Program:
- A. Letter of Authorization signed by client for Aggregator to gather demand history from utility.
  - B. Aggregator performs analysis of historical data.
  - C. Client signs agreement with Aggregator.
  - D. Contract with aggregator range from 3 to 5 years.
  - E. Aggregator will perform yearly analysis of program to ensure client is enrolled in most beneficial program

Aggregator – Company that negotiates with ERCOT on behalf of the consumer.

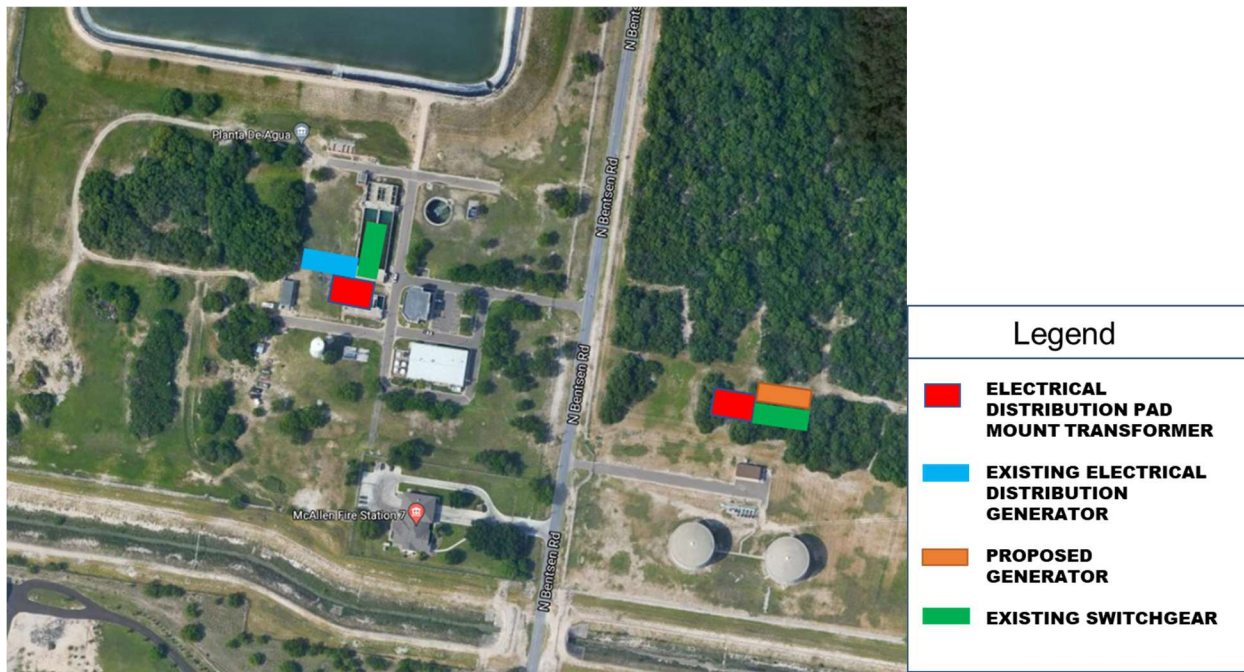
# Phase IV: NORTH WATER TREATMENT PLANT ELECTRICAL ASSESSMENT

## Evaluation of Automated Power Backup at North WTP

An evaluation was performed for the implementation of automated power backup at the North Water Treatment Plant.

There are two viable options for providing backup power to the high service pumps at the plant. Option I consists of utilizing an existing generator that is located across the street from the North Water Treatment Plant for backup power. This would require extending new feeders from the existing generator to the plant. Option II consists of installing a new 1250kW generator located within the North Water Treatment Plant.

Both options are illustrated in Figure 20.



## 15kV Switchgear

An evaluation of the implementation of utility to generator automatic switchover at the existing 15kV switchgear was completed to allow automatic startup of backup power without the need of manual transfer by personnel. The evaluation concluded the need of modifications and upgrades to the existing MTS for auto-transfer capability, modifications and upgrades to the existing switchboards for PLC-based auto-transfer capability, modifications and upgrades to the main switchboards to electronically operate the main breakers and the replacement of the 15kV switches at the HSP building for auto-transfer capability.

OPCC

Preliminary construction cost estimates including all required electrical work and equipment required for backup power options at the North Water Treatment Plant are outlined below.

**Backup Power for High Service Pumps:**

- Option I: Feeder from existing Generator..... \$ 4.8M
- Option II: New 1250kW generator for HSP..... \$ 1.3M

**Switchgear Modifications:**

- Modifications/Upgrades to existing MTS for auto-transfer capability
- Modifications/Upgrades to existing Switchboards for PLC-based auto-transfer capability
- Modifications/Upgrades to main switchboards to electronically operate main breakers
- Replace 15kV Switches at HSP Building for auto-transfer capability
- Total Cost for incorporate Auto-Transfer ..... \$ 317k

## Phase V: FINAL REPORTING AND RECOMMENDATIONS

A backup generator options ranking analysis was performed to determine overall ranking of all viable solutions based on system reliability, cost and maintenance.

South WTP - Backup Generator Options Ranking				
OPTION	Reliability Points	Cost Points	Maintenance Points	Total Points
Centralized Genset - Diesel	10	10	4	24
Microgrid - Diesel	10	8	2	20
Centralized Genset- Natural Gas	8	7	4	19
Distributed Genset - Diesel	7	9	2	18
Distributed Natural Gas - Diesel	7	8	2	17
Reliability Points: 1 Least, 10 most				
Cost Points: 1 Least, 10 most				
Maintenance: 1 Least, 5 most				

Table 2: South WTP – Backup Generator Options Ranking

Based on the findings of this study, the final engineering recommendation is to utilize a centralized genset distribution to provide backup power to the South Water Treatment Plant with automatic backup capability as detailed below.

### Final Recommendations:

- 3.75MW Centrally Located Diesel Generator and Soft Starters for Large Motors at the SW WTP
- 40 kW and 80 kW Diesel Generator, respectively, for the Lab & T&D Building.
- 15kV Switchgear Modifications to Automate Utility Feed Switching at the SW WTP for Increased Safety
- Consider replacing older primary feeders from main electrical room to pad-mount transformers at SW WTP
- 350kW Diesel Generator at the New Boeye Reservoir
- Consider Coordinating with an Aggregator to Implement a Demand Response Program

### The following recommendations can be delayed to be included with other planned improvements at the North WTP:

- 15kV Switchgear and 480V Switchgear Modifications to Automate Utility Feed Switching at North Water Treatment Plant for Increased Safety
- 1.25MW Diesel Generator for the High Service Pumps at the North Water Treatment Plant



AGENDA ITEM 2.b.

PUBLIC UTILITY BOARD

DATE SUBMITTED 05/03/2023

MEETING DATE 5/9/2023

1. Agenda Item: Consideration and Approval to Purchase Collection System Aerators for Balboa Acres & NWWTP Lift Stations

2. Party Making Request:  
Marco Ramirez, Utility Engineer P.E.

3. Nature of Request: Consideration and Approval to Purchase Collection System Aerators for Balboa Acres & NWWTP Lift Stations

4. Budgeted: Yes

Bid Amount:	<u>\$119,840</u>	Budgeted Amount:	<u>\$120,000</u>
Under Budget:	<u>\$160</u>	Over Budget:	<u>\$0.00</u>
		Amount Remaining:	<u>\$160</u>

5. Reimbursement:

6. Routing:  
 Marco Ramirez Created/Initiated - 5/3/2023  
 Gerardo Noriega Final Approval - 5/3/2023

7. Staff's Recommendation: Staff Recommends Approval.

8. City Attorney: Approve. IJT

9. MPU General Manager: Approved - MAV

10. Director of Finance for Utilities: Approved - MDC

# Memo

**TO:** Marco A. Vega, P.E., General Manager  
J.J. Rodriguez, Asst. General Manager

**FROM:** Marco Ramirez, P.E., Utility Engineer

**DATE:** May 3, 2023

**SUBJECT:** Consideration and Approval to Purchase Collection System Aerators for  
Balboa Acres & NWWTP Lift Stations

Consideration and Approval to Purchase Collection System Aerators (Wet Well Wizards) to treat fat, oils, and grease (FOG) in the collection system as well as reducing H<sub>2</sub>S levels. Trials were conducted with these mixers at various lift stations within our collection system with positive results within a short period of time. Staff budgeted \$120,000 under the current Fiscal Year to purchase and install these mixers at two major lift stations, Balboa Acres Lift Station, and the North Wastewater Treatment Plant Lift Station. The purchase would be through TIPS Cooperative Contract. Staff has received a quote from CPM Pipelines for **\$119,840.00** for the purchase and installation of this equipment.

Staff recommends Approval of purchase of Collection System Aerators from CPM Pipelines through TIPS Coop for **\$119,840.00**.

Staff will be available for comments and questions at the MPUB meeting.



CPM Pipelines  
 3625 E Atlanta Ave, Suite #2  
 Phoenix, AZ 85040

# Estimate

Date	Estimate #
05/02/2023	5049 rev1

Name / Address
City of McAllen 1300 Huston Ave McAllen, TX 78501 ATTN:David Garza

Rep	Project
FP	

Item	Description	Qty	U/M	Rate	Total
RELIANT TIPS	TIP 210304 Balboa Acres LS & NWWTP LS TIPS Wet Well Wizard System Includes WET WELL WIZARD Complete with: • one (1) Wet Well Wizard • 45' of 3-ply EPDM 1" ID air hose • stainless steel and brass hose fittings RELIANT WET WELL WIZARD BLOWER Complete with: • one (1) 4HP, 480V, 3-phase 60Hz two stage regenerative blower with air filtration system, pressure relief valve, four- port manifold, stainless steel connection hardware with inches of water gauge, IP 65 motor protection, and SS filter hood • installation instruction manual HDPE NON-CORROSIVE BLOWER PROTECTIVE COVER WITH BASE Prevents sun and dust damage Freight	4	ea	12,500.00	\$50,000.00

<b>Total</b>
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CPM Pipelines  
 3625 E Atlanta Ave, Suite #2  
 Phoenix, AZ 85040

# Estimate

Date	Estimate #
05/02/2023	5049 rev1

Name / Address
City of McAllen 1300 Huston Ave McAllen, TX 78501 ATTN:David Garza

Rep	Project
FP	

Item	Description	Qty	U/M	Rate	Total
RELIANT TIPS (ADDI...	Additional Wizard	12	ea	\$5,695.00	\$68,340.00
SU&T (LS)	HDPE NON-CORROSIVE BLOWER PROTECTIVE COVER WITH BASE Prevents sun and dust damage  START-UP & TRAINING PER LUMP SUM  GENERAL NOTES • Current lead times are up to 12-14 weeks.  • Client to confirm site voltage & phase options  • Client to confirm equipment satisfies project/design specifications. Failure to do so may change pricing shown on this quote  • Hose length is quoted assuming the blower is located next to the wet well. If the blower is located elsewhere, additional hose may be needed, and water levels may need to be adjusted.  • Locking cover available for additional charge	1	LS	1,500.00	1,500.00

<b>Total</b>
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CPM Pipelines  
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 Phoenix, AZ 85040

# Estimate

Date	Estimate #
05/02/2023	5049 rev1

Name / Address
City of McAllen 1300 Huston Ave McAllen, TX 78501 ATTN:David Garza

Rep	Project
FP	

Item	Description	Qty	U/M	Rate	Total
	<ul style="list-style-type: none"> <li>• Blower upgrades available for additional charge (SS filter, replacement filter, and auto restart switch)</li> <li>• Single Manifold standard - Dual, Triple and Quad manifolds available for additional charge</li> <li>• Motor Starters are without cable and must be mounted and connected by a certified electrician; if a motor starter is ordered with a blower enclosure, factory technicians will mount the MMS box onto the enclosure but it will be the responsibility of the installation electrician to run power to the motor starter.</li> <li>• Please review all Wet Well Wizard submittal documents for installation instructions; CPM SU&amp;T occurs after system is installed and electrical is connected.</li> <li>• Blower warranty is not valid without the use of some type of thermal or amperometric motor controller for the blower</li> <li>• Due to the shape of the bottom of some wells it may be required that the Wizard be hung off the floor. This is commonly done by using a hose grip at the surface of the well to allow for the hose and Wizard to hang off the bottom. Wizard must be underwater 100% of the time.</li> <li>• On multiple Wizard installations where the distance</li> </ul>				

<b>Total</b>
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CPM Pipelines  
 3625 E Atlanta Ave, Suite #2  
 Phoenix, AZ 85040

# Estimate

Date	Estimate #
05/02/2023	5049 rev1

Name / Address
City of McAllen 1300 Huston Ave McAllen, TX 78501 ATTN:David Garza

Rep	Project
FP	

Item	Description	Qty	U/M	Rate	Total
TERMS&CONDITIONS	between the blower and any single Wizard is different from the other, it will be necessary to install a 1" air balancing ball valve on each of the Wizard hoses in order to balance the amount of air at each Wizard.  Please review our Terms & Conditions of Sale on our website under Products & Services. Non Taxable Sale	1	ea	0.00	0.00
				0.00%	0.00

Check our valve inventory at <http://www.cmpipelines.com>

<b>Total</b>	\$119,840.00
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PLEASE NOTE: Due to new tax laws, tax will be charged if a tax-exempt certificate cannot be provided prior to any sale. Please email([bella@cmpipelines.com](mailto:bella@cmpipelines.com)) with any questions.

If Paying with Credit Card there will be a 5% fee added to invoice



	<b>AGENDA ITEM</b>	<b><u>4.a.</u></b>
<b>PUBLIC UTILITY BOARD</b>	<b>DATE SUBMITTED</b>	<b>05/03/2023</b>
	<b>MEETING DATE</b>	<b>5/9/2023</b>

1. Agenda Item: Consultation with City Attorney regarding legal issues with contract negotiation. (Section 551.071, T.G.C)

2. Party Making Request:

3. Nature of Request:

4. Budgeted:

<b>Bid Amount:</b>	_____	<b>Budgeted Amount:</b>	_____
<b>Under Budget:</b>	_____	<b>Over Budget:</b>	_____
		<b>Amount Remaining:</b>	_____

5. Reimbursement:

6. Routing:  
Savannah Arredondo                      Created/Initiated - 5/3/2023

7. Staff's Recommendation:

8. City Attorney: None. IJT

9. MPU General Manager: N/A - MAV

10. Director of Finance for Utilities: N/A - MDC