AGENDA
1. Welcome
2. Previous Action Items
3. FY18 Completed Projects
4. FY18 Active Construction Projects
5. RRADs Overview
6. Pivot Strategy 2018
7. FY19 Proposed Project
8. FY20/21 Proposed Project
9. TYP Next Steps / Action Item Recap
March Quarterly Customer Meeting

• Welcome to the first quarter customer meeting

• The goal of these quarterly meetings is to establish a program of routine, predictable topics, with shorter durations

• The focus of today's quarterly meeting is active construction and the RRADS Program
Action Items Discussion

Overview of Outstanding Action Items

- Many of the action items relating to the proposed 10-Year Plan projects are covered in this presentation.
- A complete list of the Action Items gathered from the February 27th “Pivot Meeting” and the February 28th CTC meeting can be located in the Appendix of the Handout Book.
- WAPA has begun to assess and prepare documentation relating to the Wood vs. Steel decision, in regards to structure replacements and standard operating procedure.
- Once the wood vs. steel information has been compiled a customer work group session will be scheduled.
- WAPA will also host a separate customer work group session to discuss the RRADs program and address any customer questions and concerns.

FY18 COMPLETED PROJECTS
Tucson Substation Rebuild

See page 7 of the handout booklet

Project Updates

• Construction activities are complete
• Substation currently energized
• The following line segments have been tied-in
  • Del Bac – Tucson
  • Saguaro – Tucson
  • Oracle – Tucson

Closeout Status

• Projected for June 2018

Desert Southwest Region - Ten Year Capital Plan
Project Manager: Mike Garcia

Tucson Substation Rebuild

FUNDING SUMMARY

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* Executions to date, column "D", include expenses, obligations, and commitments through 2/26/18

Desert Southwest Region - Ten Year Capital Plan
Project Manager: Mike Garcia
Mesa Substation Remediation

See page 8 of the handout booklet

Project Updates

• WAPA environmental final report completed
• Received final approval from Arizona Department of Environmental Quality (ADEQ) on the remedial completion report
• Contractor public notice posting time period has ended, waiting for public responses

Closeout Status

• Request a “No Further Action” letter from ADEQ
• Projected for May 2018

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* Executions to date, column “0”, include expenses, obligations, and commitments through 2/28/18
Mesa Substation Remediation

**Land Disposal**

- **WAPA does not have a need or use for the property currently or in the foreseeable future**

- **Property will be cleared and prepared for sale through the GSA process**

- **The value of the property is undetermined and will depend upon the purchasing entity and provisions provided to them by GSA**

- **WAPA has inquired about possible land swap options and will continue to seek a land disposal option that maximizes the benefit to the Parker-Davis Project**

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**FY18 ACTIVE CONSTRUCTION PROJECTS**
Parker-Headgate Rock & Parker-Bouse

See page 10 of the handout booklet

Project Milestones

• This project has been put on hold for reevaluation. WAPA is currently considering other alignment options for the rebuild.

Project Updates

• The results and comments from the last public scoping meeting are still being considered

Project Risks

• Project Risks vary depending on which alignment is selected

Projected Completion

• On hold pending transmission line routing

Desert Southwest Region - Ten Year Capital Plan

Project Manager: Mike Baird

Parker-Headgate Rock & Parker-Bouse

Desert Southwest Region - Ten Year Capital Plan

Project Manager: Mike Baird

<table>
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Gila Substation 161-kV Rebuild

See page 12 of the handout booklet

Project Milestones
• 100% design April 2018
• Construction start October 2018

Project Updates
• All lands activities complete
• All pre-construction environmental activities complete

Project Risks
• Due to line congestion outside of substation several coordinated outages will be required

Projected Energization
• April 2020

Project Manager: Tony Gagajewski

Gila Substation 161-kV Rebuild

FUNDING SUMMARY

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Desert Southwest Region - Ten Year Capital Plan
Project Manager: Tony Gagajewski
Gila-Knob 161-kV Rebuild

See page 14 of the handout booklet

Project Milestones
- Construction began January 2018
- Outage completion April 2018
- Project closeout begins May 2018

Project Updates
- Majority of contractor submittals have been received and approved

Project Risks
- Limited outage window

Projected Energization
- April 2018

Desert Southwest Region - Ten Year Capital Plan

Project Manager: Tony Gagajewski
Crossman Peak Microwave Facility

See page 16 of the handout booklet

Project Milestones

- 100% design package June 2018
- Final design and specification to procurement August 2018
- Construction start January 2019

Project Updates

- Finalized design of communication building

Project Risks

- No current risk

Projected Completion

- November 2019

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Project Manager: Mike Garcia

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Crossman Peak Microwave Facility

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<th>Funding Type</th>
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* Executions to date, column "D", include expenses, obligations, and commitments through 3/28/18

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Project Manager: Mike Garcia
Liberty Series Capacitor Bank

See page 18 of the handout booklet

Project Milestones

• 100% design February 2018
• Outage on the Liberty – Peacock 345-kV transmission line is scheduled for January 2019 – March 2019

Project Updates

• Government furnished capacitor bank factory testing is scheduled for May 2018

Project Risks

• Limited outage window

Projected Energization

• April 2019

Liberty Series Capacitor Bank

Desert Southwest Region - Ten Year Capital Plan

Project Manager: Roger Wright

Liberty Series Capacitor Bank

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* Executions to date, column "D", include expenses, obligations, and commitments through 3/28/18

Desert Southwest Region - Ten Year Capital Plan

Project Manager: Roger Wright
Gila-Wellton Mohawk I-8 Crossing

See page 20 of the handout booklet

Project Milestones

• 100% design January 2018
• Construction contract award April 2018
• Construction begins November 2018

Project Updates

• Lands and Environmental activities progressing on time
• All Government furnished equipment and primary contract currently in progress

Project Risks

• New technology to WAPA – employing the use of micro-piles due to rough terrain on site

Projected Energization

• May 2019

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* Expenditures to date, columns "D", include expenses, obligations, and commitments through 2/28/18
SEED FUNDING UPDATE

Seed Funding Projects

- See page 44 of the handout booklet.
- Kofa-Dome Tap and Dome Tap-Gila were selected to utilized appropriated seed funding in November 2017.
- The goal is to develop >50% design package and a revalidated project budget.
- Continuing Resolution through March 23rd, 2018 had limited WAPA’s available appropriated funds. The full budget was passed on March 23rd.
- Appropriations are currently coming from DOE to WAPA HQ and will be distributed to regions.
Impacts of Continuing Resolution

• To date only Coolidge-Valley Farms has kick-off design, due to the use of prepayments for seed funding in lieu of appropriations

• Currently WAPA is awaiting distribution of appropriations to seed fund Kofa-Dome Tap and Dome-Tap Gila

• Construction has initiated the formal design process.

Appropriated Seed Funding Project Delays

• WAPA estimates that approximately six months is required to develop >50% design package and a revalidated project budget

• Prior delays in seed funding could impact the vote for full prepayment funding in December of this year.

• Construction is currently on track to meet the partial design required for the September meeting leading to the vote in December.
Coolidge-Valley Farms 115-kV Rebuild

See page 23 of the handout booklet

Project Milestones
• Kick-off meeting February 2018
• Preliminary design complete August 2018
• Request full prepayment funding December 2018

Project Updates
• Project has begun design phase

Project Risks
• Environmentally and culturally sensitive areas near ROW

Projected Energization
• TBD based on full funding approval

Project Manager: Roger Wright

Coolidge – Valley Farms 115-kV Rebuild

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* Executions to date, column "D", include expenses, obligations, and commitments through 2/28/18
### Kofa-Dome Tap 161-kV Rebuild

**Status:** In Formal Design Process

*See page 25 of the handout booklet*

#### Transmission Line Description

- Single-circuit, 7.3-mile line segment along the Parker-Gila Transmission line
- Originally constructed in 1943 with 300 kcmil hollow core copper conductors
- Most wood H-Frame structures have been replaced with light duty steel H-Frame structures
- Seven wood structures remain in service

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**Project Description**  
**Project Manager:** Mike Garcia

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#### FUNDING SUMMARY

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*Expenditures to date, column “D”, include expenses, obligations, and commitments through 2/28/18*
Kofa-Dome Tap 161-kV Rebuild

**Status:** In Formal Design Process

**Project Description:**
- Replace 7.3 miles of 300 kcmil hollow core conductor with 336.4 kcmil ACSS conductor.
- Replace the existing steel OGW with OPGW
- Replace the existing 7 wood structures with light duty steel H-Frames.
- Additional H-Frames to be installed as needed to rectify any remaining clearance issues.
- $500,000 appropriated seed funds will be used to complete >50% design package and revalidated project estimate
- Prepayment funds will be requested in December 2018 to fully fund the project through closeout in accordance with revalidated project estimate

Dome Tap-Gila 161-kV Rebuild

**Status:** In Formal Design Process

*See page 28 of the handout booklet*

**Transmission Line Description**
- Single circuit, 7.5 mile line segment along the Parker-Gila transmission line
- Originally constructed in 1943 the line is constructed with 300 kcmil hollow core copper conductor
- Current mix of wood and light duty steel H-frame structures
- 16 wood structures remain in this segment
Dome Tap- Gila 161-kV Rebuild

Status: In Formal Design Process

Project Description:
• Replace 7.6 miles of 300kcmil hollow core conductor with 336.4 kcmil ACSS conductor.
• Replace the existing steel OGW with OPGW
• Replace the existing 16 wood structures with light duty steel H-Frames.
• Additional H-Frames to be installed as needed to rectify any remaining clearance issues.
• $500,000 appropriated seed funds will be used to complete >50% design package and revalidated project estimate
• Prepayment funds will be requested in December 2018 to fully fund the project through closeout in accordance with revalidated project estimate

AOA Study Alternatives Identified
Project Manager: Tony Gagajewski
DSW RETIREMENTS, REPLACEMENTS, ADDITIONS, DELETIONS (RRADs) PROGRAM

RRADs Overview

• RRADs projects are typically completed in less than one year and rely primarily on federal labor to complete

• Minimal design is required for RRADs projects

• Some examples of RRADs projects are battery replacements and transmission line repair
DSW RRADs PROGRAM MANAGEMENT

• RRADs Program Manager
  • Facilitates Meetings with Committee Members
  • Coordinates all Communication pertaining to this program
  • Presents planned Budgets programs to DSW Senior Management to get approval
  • Administers all aspects of the program to include financial documents to Budget Office, plan programs for current year and out years, coordination of funding issues, and monitors execution

• DSW RRADs Program Committee Members
  • Committee Members represents all DSW Organizations
  • Subject Matter Experts consists of Senior Management, Foremen, Procurement, Budget and Finance, Power Marketing, Environmental, Operations, Senior Analysts, Project Managers, and Engineers

RRADs COMMITTEE ROLES AND RESPONSIBILITIES

• Program DSW’s 10-Year Plan

• Program a Budget Plan for 2 years out for Budget Submission for DSW’s OMB Formulation

• Revalidation in the year of execution based on current program needs
  • Committee will prioritize projects based on current year needs, goal is to stay within programmed budget marks set 2 year ago
  • Emergency and Unfunded projects are reprogrammed utilizing current Budget allocations

• Committee members are responsible to ensure that planned program for the current year is executed
  • Provide status on their projects
  • Provide documentation for their project submissions
RRADs 10-YEAR PLAN

• Existing 10-Year Plan is programmed like any other Budget Program
  • Current Year, plus two years out are locked Budgets
  • On the Year Four Plan and out there are reoccurring programs that are done annually and are programmed in the current year and the rest of the out years of the 10-Year Program.
• Examples of Reoccurring Programs:
  • Wood Pole
  • Meter Replacements
  • Relay Line Replacements
  • Microwave Sites
  • Remote Terminal Units (RTUs)
  • Test Equipment
  • Facility Upgrades
  • Headquarters IT RRADs Software and Hardware Upgrades
  • Heavy Equipment Purchases
  • Power System Replacements 48VDC Charger and Battery for Communication Sites
  • Critical Infrastructure Protection for Cyber Security Assets (WIN/CIP)
  • Radio Replacements Joint Use System (JUS)
  • Digital Monitoring Equipment (DME)/Digital Fault Equipment

Benefits to Utilizing RRADs Program

• Utilization of DSW Internal Resources
  • The ability to procure equipment and materials and then have our craft employees do the work is a cost savings to our customers rather than contracting out the work.
• Areas of support:
  • Communication and Protection Projects
  • Substation Projects
  • Transmission Line Projects

Desert Southwest Region - Ten Year Capital Plan
Program Manager: Nancy Ruiz
DSW’s RRADs 10-YEAR PLAN DETAILS

- For a full breakout of the RRADs program see the handout book section 6.2, starting on page 31.
- This breakout also includes the IT program.

BREAK
(10 MINUTES)
10-YEAR PLAN PIVOT STRATEGY

What is the Pivot?

• The pivot strategy was first discussed last month during WAPA’s “10-Year Plan Pivot Meeting” held February 27th, 2018
• The pivot is a onetime effort to shift the 10-Year Plan into alignment with Government's budget formulation
• An ambitious plan this calendar year to shift from FY19 project approvals, to FY21 approvals
• A successful pivot concludes in December of 2018 with a prepayment voting meeting
Why Do We Need to Pivot?

- Federal Government Budget Formulation process occurs two fiscal years prior to execution year
- Current 10-Year Plan hosts the Prepayment Funding vote during the execution year (current fiscal year)

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Customer Benefits

- Customer meetings focus on input into budget formulation
- AOA studies are performed in advance of budget formulation
- Customer engagement in AOA planning
- New alignment will improve consistency from Budget Formulation to Execution year

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Desert Southwest Region - Ten Year Capital Plan
Objectives to Execute the Pivot?

• AOA’ for FY19, FY20, & FY21 are complete
• Preferred alternative (scope) for each proposed project must be reviewed and approved
• Budgets for proposed projects must be approved by customers in advance of prepayment vote

Desert Southwest Region - Ten Year Capital Plan

PREPAYMENT VOTING MEETINGS | START | PROPOSED PROJECTS
---|---|---
**DECEMBER 18’**
FY18 | Coolidge-Valley Farms 115kV Rebuild
FY18 | Kofa-Dome Tap 161kV Rebuild
FY18 | Dome-Gila 161kV Rebuild
FY19 | Bouse-Kofa 161kV Rebuild Ph: I
FY19 | Bouse-Kofa 161kV Rebuild Ph: II
FY20 | Parker-Blythe 161kV Rebuild Ph: I
FY21 | Parker-Blythe 161kV Rebuild Ph: II

**DECEMBER 19’**
FY22 | Parker-Blythe 161kV Rebuild Ph: III
FY22 | TBD

**DECEMBER 20’**
FY23 | Blythe-Headgate Rock 161kV Rebuild
FY23 | TBD

Objectives to Execute the Pivot?

• Look ahead at the upcoming projected Pre-Payment Vote for FY 19/20/21.
  • FY22 and FY23 are speculative and have not gone through MDCC Ranking.
FY19 PROPOSED PROJECTS

Bouse-Kofa 161-kV Transmission Line Reconstruct
Bouse-Kofa 161-kV AOA

Transmission Line Details
- 84 mile segment of the Parker-Gila transmission line built in 1943
- Single circuit transmission line
- Mix of wood and light duty steel H-frame structures
- 82 wood structures remain
- 211 Light duty steel H-frame structures added in early 2000’s
- In 2006 a 8.4 mile portion of the line was rerouted around town of Quartzsite with 954 ACSR on steel monopoles

Project Justification
- 106 NERC/NESC violations require corrective action/engineering fix
- Significant deteriorated and unsafe wood structures
- Vintage 1943 300 kcmil hollow core copper conductor experiencing significant sag
- Access roads and ROW require rehabilitation
- Currently 82% of the line has up-to-date inspection data and the total failing wood pole count is 32
- Additional communication bandwidth is required via Fiber optic ground wire to meet current and future protection, control, communication and security requirements
Bouse-Kofa 161-kV AOA

Alternatives Studies

- **Alternative 1:** Status Quo (Maintenance only)
  - Does not meet NERC Requirements to mitigate clearance violations

- **Alternative 2:** Reconductor + Replace failing wood poles in-kind
  - 82 wood structures remain. While this option has a lower up-front construction cost, the long term maintenance of wood poles offsets the initial investment

- **Alternative 3:** Reconductor + Replace all wood poles with Light Duty Steel H-Frame Structures *(Selected Alternative)*
  - Larger initial investment than Alternative 2 however, long term maintenance cost is less than wood pole alternatives. Removes all wood so line is 100% steel.

- **Alternative 4:** Rebuild the line to 230-kV Standards operated at 161-kV using Steel Monopole
  - Is prohibitively expensive and no commercial need for 230-kV capacity in the region

- **Alternative 5:** Install 106 Inset Structures as needed to mitigate NERC/NESC violations
  - Increases structure count without addressing wood pole replacement/maintenance cost.
Bouse-Kofa 161-kV AOA

Proposed Rebuild Scope

• Reconduct 75 miles (9 mile reroute around Quartzite does not require rebuild) with 336.4 kcmil ACSS to reduce sag, eliminating most of the 106 NERC/NESC violations
• Upgrade 82 wood structures to light duty steel H-frames
  • Of these, ~5-10 will be steel dead-end structures
• Install new steel structures as needed to correct NERC/NESC clearance issues not corrected by stringing new conductor
• Add Optical Overhead Ground Wire (OPGW) along all 85 miles of transmission line
• Repair/Reclaim ROW access
• Copper conductor has an estimated salvage value of ~$1.7M

Bouse-Kofa 161-kV AOA

FY19 Proposed Projects: Phase I & II

WAPA is investigating a single design package for the entire BSE-KOF line segment, with two solicitation packages for procurement of separate concurrent construction contracts

• Phase I
  • ~44 miles of rebuild from Kofa Substation heading north

• Phase II
  • ~31 miles of rebuild from Bouse Substation heading south

This will allow concurrent construction of both phases in a single outage window. Reducing total project duration and improving constructability within difficult terrain.
Bouse-Kofa 161-kV AOA

Currently In Progress

- Revalidating of estimates to split project into phases
  - AOA study was initially performed as a single construction project. Phasing will lead to modifications of the estimate and is currently being re-evaluated to ensure accurate phasing budgets
  - New Estimate should be available for June Quarterly Meeting

- Revalidating lifetime maintenance estimates for alternative comparisons
  - WAPA is currently evaluating the costs and effort associated with maintenance of wood poles. The results of this investigation will be used to generate up-to-date estimates for lifetime maintenance costs for proposed project alternatives.

FY20-21 PROPOSED PROJECTS
FY20-21 PROPOSED PROJECT

Parker-Blythe 161-kV Transmission Line Rebuild

Desert Southwest Region - Ten Year Capital Plan

Parker-Blythe 161-kV AOA

Transmission Line Details

- 64 miles of wood pole transmission line built in 1969
- Single circuit 954 kcmil ACSR
- H-frame wood pole structures with 3-pole angle structures
- ROW crosses Arizona and California state lines
- Incredibly rough terrain for large sections of the line
  - Directly West of Parker Substation the terrain is very mountainous with limited access
  - Further south lies open desert with sand dunes crossing WAPA’s ROW
- Area outside of Parker Substation is heavily congested with Transmission lines
- Current ROW held by WAPA is perpetual and redirecting line would cause the loss of that easement
Parker-Blythe 161-kV AOA

Project Justification
• 80% of the wood poles are rejected/require replacement
• 5 NERC/NESC clearance violations requiring engineering fix
• Repair/Reclaim ROW access
• 20% of the structures (100+) require dozer tow-in for access to structures
• Additional communication bandwidth is required via Fiber optic ground wire to meet current and future protection, control, communication and security requirements
Parker-Blythe 161-kV AOA

Alternatives Studies

- Alternative 1 - Status Quo (Maintenance only)
  - 80% of line is currently rated C or D for pole health. The line has high maintenance costs due to terrain restrictions. Many poles unreachable by trucks alone. Helicopters and/or bulldozers required to access many structures in the event maintenance is required.

- Alternative 2 - Replace wood poles in kind and add steel structure dead-ends every <10 miles
  - Due to difficult terrain, replacing in-kind would require continued maintenance inside this difficult corridor which is prone to high maintenance cost compared to light-duty steel alternatives

- Alternative 3 - Rebuild with light duty steel H-Frame structures using 161-kV specifications and standards
  - 161-kV hardware/parts are less readily available and can be costly compared to 230kV. Standardizing maintenance equipment/parts/tools is more cost efficient across WAPA’s system

- Alternative 3a - Rebuild with light duty steel H-Frame structures using 230-kV specifications and standards (Selected Alternative)
  - A larger investment than Alternative 3, however allows for standardization of maintenance parts/hardware/tools and creates efficiencies across WAPA’s system. Also allows the ability to convert to 230-kV should any future interconnections be proposed.

- Alternative 4 - Rebuild with steel monopoles using 161-kV specifications and standards
  - Cost prohibitive due to large upfront cost of steel monopoles and installation cost

- Alternative 5 - Rebuild with steel monopoles using 230-kV specifications and standards (operated at 161-kV)
  - Load growth and a need for increased capacity is not anticipated therefore the cost benefit is unfavorable

Proposed Rebuild Scope

- New conductor, insulators, and hardware
- Upgrade all wood poles structures to light duty steel H-frame structures
- Install steel dead-end structures as required by design
- Add optical overhead ground wire (OPGW)
- Repair/reclaim ROW access
- Design using 230-kV standards/specifications operated at 161-kV to help standardize maintenance and improve availability of replacement/equipment
Parker-Blythe 161-kV AOA

FY20 Proposed Project: Phase I, II and III – Alternate 3a

WAPA is investigating a single design package, with three solicitation packages for procurement of separate construction contracts for each phase.

- **Phase I**
  - Proposed for FY20
  - ~21 miles of rebuild from Parker Substation heading south
- **Phase II**
  - Proposed for FY21 start
  - ~22 miles of rebuild from the end of Phase I to the start of Phase III
- **Phase III**
  - Proposed for FY22 start
  - ~21 miles of rebuild from Phase II to Blythe Substation

Allows for potential concurrent construction of phases in a single outage window. Reducing total project duration and improving constructability within difficult terrain.

Currently In Progress

- Revalidating of estimates to split project into phases
  - AOA study was initially performed as a single construction project. Phasing will lead to modifications of the estimate and is currently being re-evaluated to ensure accuracy
  - New Estimate should be available for June Quarterly Meeting

- Revalidating lifetime maintenance estimates for alternative comparisons
  - WAPA is currently evaluating the costs and effort associated with maintenance of wood poles. The results of this investigation will be used to generate up to date estimates for lifetime maintenance costs for proposed projects
10-YEAR PLAN NEXT STEPS

Desert Southwest Region - Ten Year Capital Plan

December 2018 Projected Prepayment Vote

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<th>Project</th>
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Next Quarterly Meeting

June 2018

• Agenda Focus:
  • DRAFT 10-Year Plan
  • FY19-21 project details
  • Focus on answering any remaining questions on proposed projects
  • Address any outstanding action items from February and March meetings.

THANK YOU