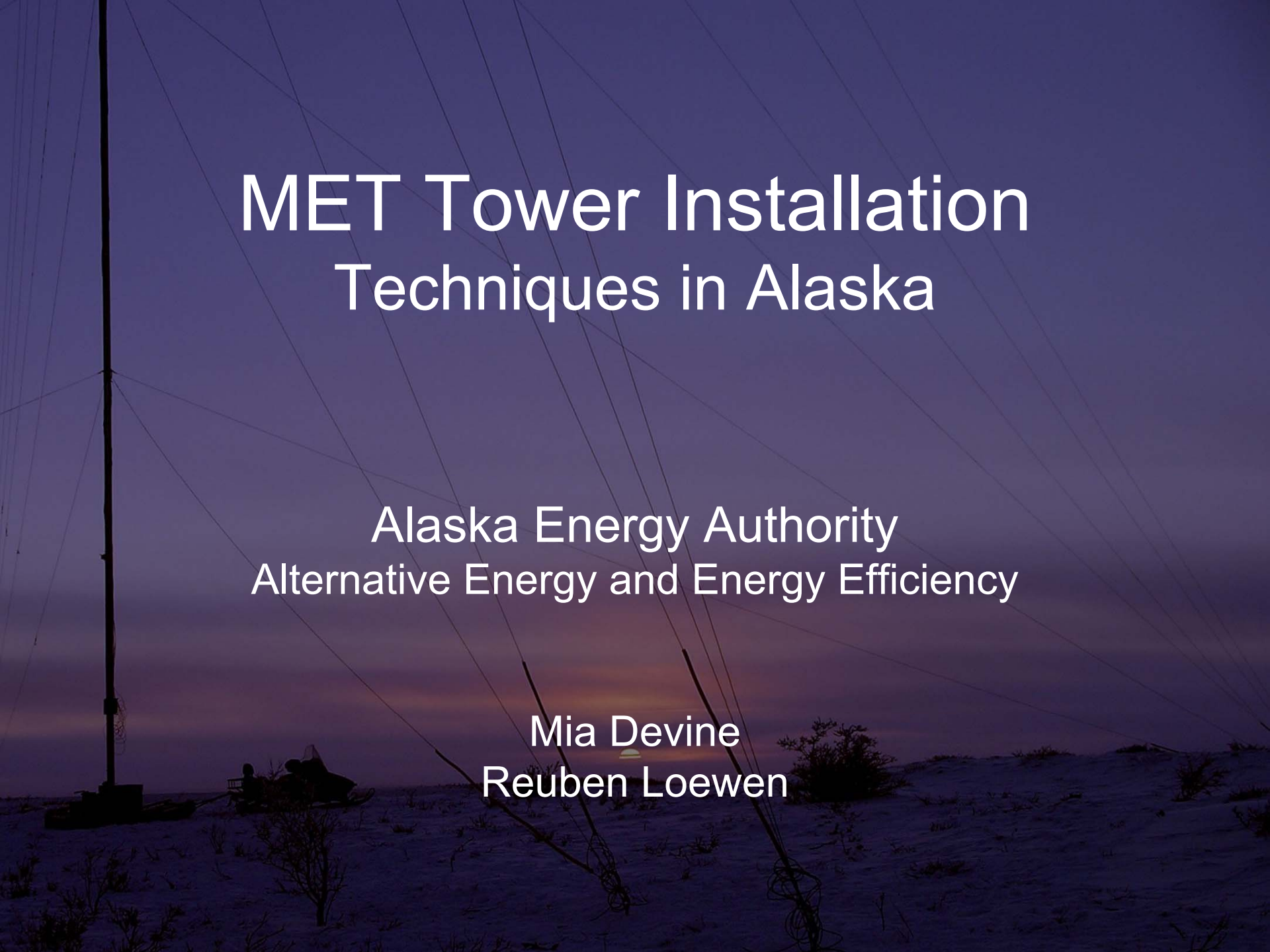


MET Tower Installation
Techniques in Alaska

Alaska Energy Authority
Alternative Energy and Energy Efficiency

Mia Devine
Reuben Loewen

Presentation Overview

- Introduction
- General Installation Steps
- Difficult Conditions
- Summary

Introduction

- Site selection and approval
  - Local governments, FWS, FAA, topography, vegetation, etc.
- Preparation, logistics, and planning
  - Limited resources at site?
  - Shipping the materials?
  - Time of year?

General Installation Steps

- Clear the site and measure anchor points

If you're fortunate…

If you're not…

General Installation Steps

- Drive the anchor

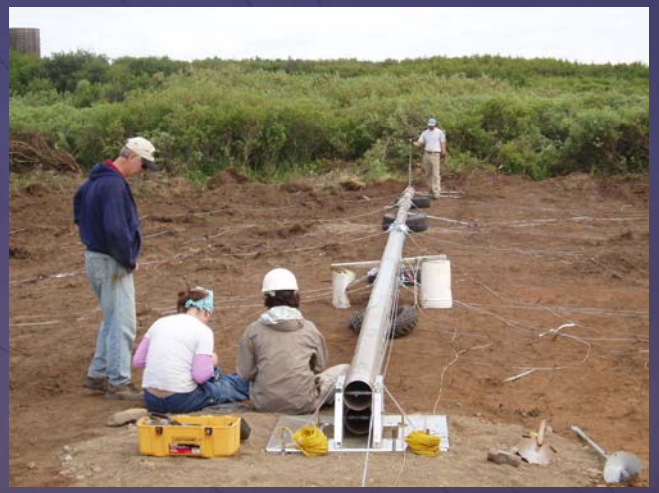
General Installation Steps

- Lay out main tower:
  - sections
  - attachments
  - base plate

- Paint tower sections

General Installation Steps

- Horizontally assemble
  - tower sections
  - collars
  - guy wires
  - gin pole
- Mount booms, sensors, sensor and ground wires



General Installation Steps

- Support and raise gin pole

General Installation Steps

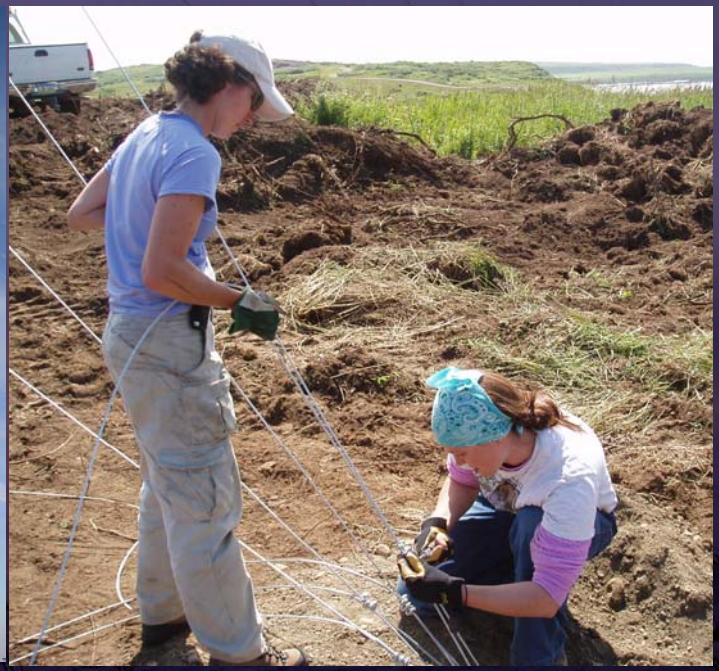
- Final arrangement of booms and sensors

General Installation Steps

- Erect tower while controlling side guy wires

General Installation Steps

- Attach gin pole wires to anchor, and straighten tower by adjusting guy wire tension



General Installation Steps

- Attach, wire, and configure data logger

General Installation Steps

- Clean-up and final check of site

Difficult Conditions

- Permafrost and anchors
  - Drive anchors during summer
  - Contract a backhoe to bury them manually

Difficult Conditions

- Winter daylight hours shortened
- Winter temperatures, protective clothing complicate efforts

Difficult Conditions

- Broken or missing winch components
- Expensive transportation of tools and materials to job sites

Summary

- Installation of 30 m MET tower with instruments
- Lack of resources, difficult locations require extensive planning prior to installation

Photos Courtesy of Doug Vaught (V3 Energy, LLC), Hannah Manser, Mia Devine, and Zach Adam

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