Colorado Springs Utilities

It's how we're all connected

Working with Utilities Design Engineering

Tara McGowan – Manager, Water/Wastewater Design

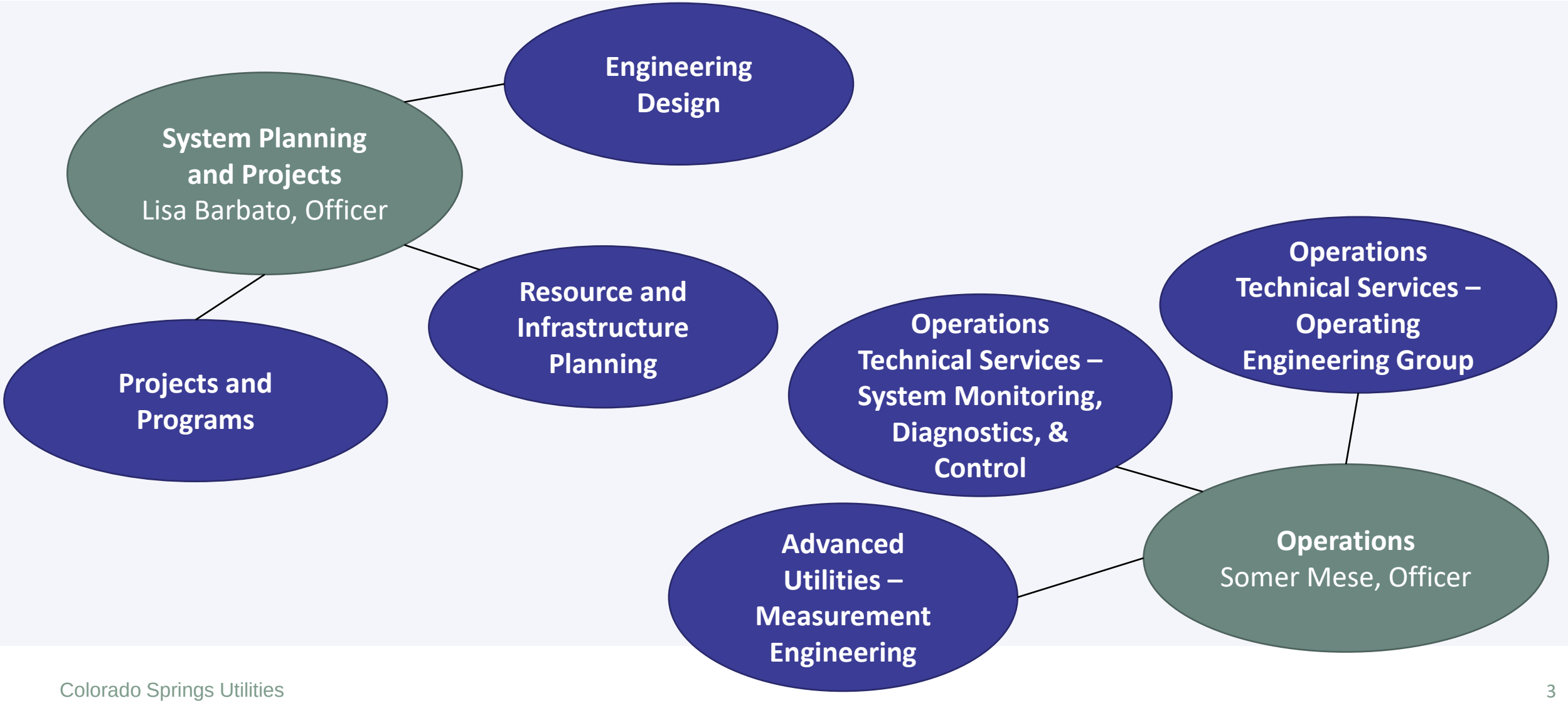
Sarah LaBarre – Manager, Electric and Gas Design

Susan Funchion – Supervisor, Water/Wastewater Linear Design

Objectives

- Introduce Colorado Springs Utilities Engineering Design Department
- Share key design expectations
- Focus on Safety by Design
- Focus on Quality Assurance
- Network with the Industry

Utilities Engineering



Utilities Engineering Design

Utilities Engineering Design

Tara McGowan

Design Manager – Water and Wastewater

Team:

Christian Meinhardt
Supervisor, Water/Wastewater Vertical Design

Susan Funchion
Supervisor, Water/Wastewater Linear Design

David Thresher
Supervisor, Water/Wastewater Engineering Support

Key Design Responsibilities:

- Water and wastewater mains
- Pump stations
- Lift stations
- Treatment plant upgrades
- Tanks

Utilities Engineering Design

Sarah LaBarre

Design Manager – Electric and Gas

Team:

Imelda Ruiz
Supervisor, Substation Design

Josh Dudeck
Supervisor, Gas Advanced Design

Robert Wilford
Supervisor, Electric Advanced Design

Key Design Responsibilities:

- Substation - electrical, civil, physical
- Electric transmission
- Electric distribution feeders
- Electric system protection and controls
- Gas high pressure mains
- Gas regulator stations
- Gas gate stations

Who is here today?

I represent:

a. An Engineering Firm

b. A Construction Firm

c. An Equipment Supplier

d. Other

What is your role?

My company's primary focus is:

a. Electric

b. Gas

c. Water

d. Wastewater

e. A combination of the above

How familiar are you with Safety by Design?

a. I have never heard of Safety by Design.
b. I am familiar with Safety by Design and incorporate some concepts into the design process.
c. I am familiar with Safety by Design and incorporate robust processes to actively engage with stakeholders and document risks and risk mitigation during the design process.
d. Other

What comes to mind when you consider Safety by Design?

a. Just another safety fad

b. Engineering controls

c. More work in the design phase

d. Cost savings

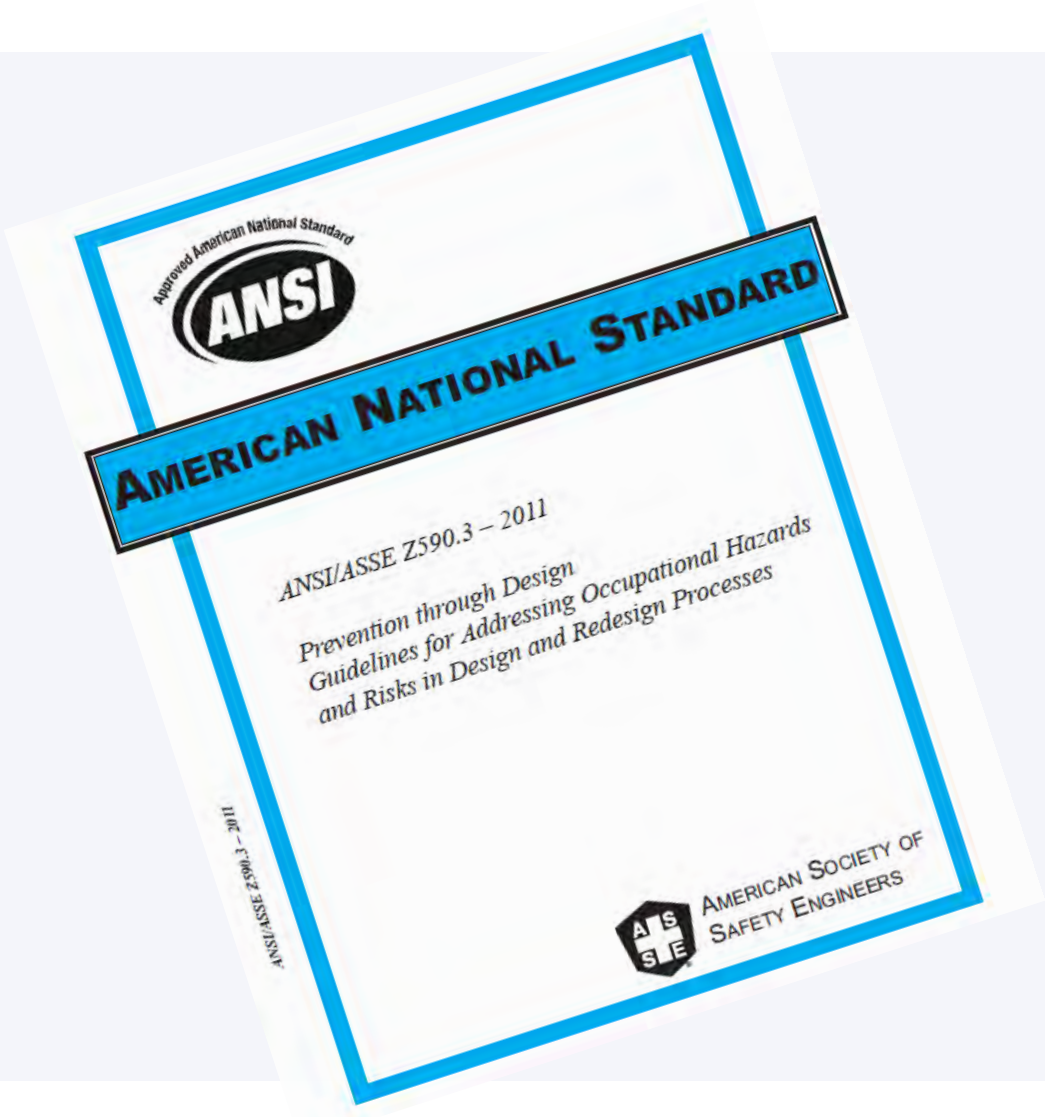
e. Elimination of safety hazards

Safety by Design

Eliminating or mitigating safety hazards during design of an asset is recognized as the most effective way to safely construct, operate, and maintain utility infrastructure.

Safety risks for the entire asset lifecycle are evaluated during design.

Safety by Design - Expectations



Consultants will develop a Safety by Design strategy and plan including:

- Fit for Design review
- Hazard analyses and risk assessment
- Risk assessment reports
- Quality control

Safety by Design will be incorporated into project and material specifications as needed.

Safety by Design Examples

What is the difference between Quality Assurance (QA) and Quality Control (QC)?

a. The second word – is this a trick question?

b. QA focuses on specifications and QC on acceptance testing

c. Checklists and checkmarks

d. QA sets requirements and QC verifies those requirements are met

e. I am not sure

What would you say is the most effective way to ensure quality in design documents?

a. Keep pushing forward and hope for the best

b. Assign a designer and a design reviewer

c. I don’t know, that is someone else’s job

d. Review, review and review again!

e. Have a defined plan and process for quality including specific time frames for review

How are Quality Assurance (QA) and Quality Control (QC) incorporated into designs at my company?

a. QA QC processes are left to individual teams. There is little consistency throughout the company and processes are not consistently applied prior to submittals to the client.
b. QA QC processes are consistent throughout the company. They are not consistently applied prior to submittals to the client.
c. QA QC processes are consistent throughout the company. They are consistently applied prior to submittals to the client.
d. Other

Quality Assurance (QA)

A systematic process of determining whether a product or service meets specified requirements. QA establishes and maintains set requirements for developing or manufacturing reliable products.

- Processes / workflows during design
- Specifications

Quality Control (QC)

A process through which a business seeks to ensure that product quality is maintained or improved. Quality control involves testing units and determining if they are within the specifications for the final product.

- Plan submittal checklists
- Factory testing of materials
- Acceptance testing

Quality Assurance/ Quality Control

Recent experience in quality of delivery items

- Incomplete submittals, missing information
- Previous comments are not adequately addressed

Consequence to Utilities

- Significant staff time to review submittals
- Significant amount of comments
- Same comments on multiple submittals
- Potential delays to schedule

Quality Assurance/ Quality Control

Quality Management Plan will be a focus of proposal reviews.

Detailed QA & QC processes and procedures:

- QA standards and specifications
- Process including project specific workflows and checklists
- Schedule of deliverables including time for QA QC process
- Relevant certification (e.g., ISO certified)
- Assigned staff to QC review
- Designated QC lead

Quality leads to repeat work opportunities.

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Open Forum: Questions & Networking