CMOM at SPU

April 11th, 2012

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Agenda

- What is CMOM?
- CMOM History at SPU
- CMOM Roadmap
  - Development
  - CO Tools
  - 3R Tool
  - SSO Performance
  - Cost

What is CMOM?

- Capacity
- Management
- Operation
- Maintenance

Clean Water Act (CWA)

- NPDES permits issued for storm drain outfalls, Wastewater Treatment Facility outfalls, and CSO since 1972
- Not a clear regulatory requirement for wastewater overflows/backups from Separated Sanitary Sewer systems
- EPA developed a proposed CWA amendment in the late 1990s – known as the "SSO Rule" to clarify the prohibition of Sanitary Sewer Overflows and define enforcement capabilities
- A key component of the SSO Rule is **CMOM**

SPU's CMOM Program

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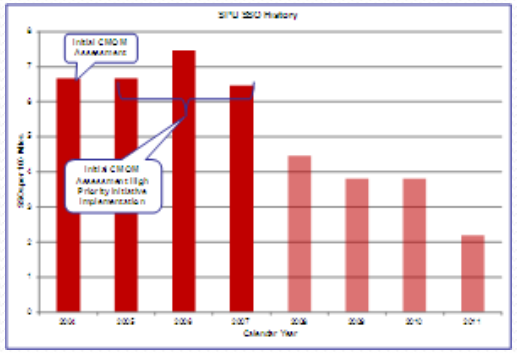
CMOM Self Assessment

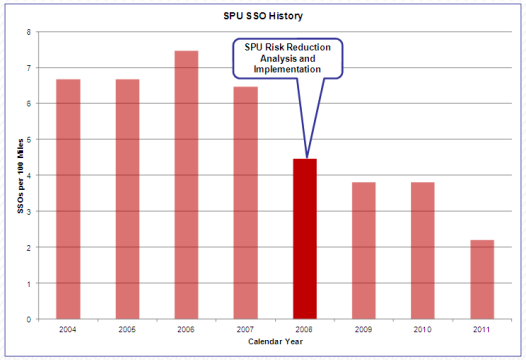
- Completed in 2005
- Early follow-up action focused around:
  - Data Collection Improvements
  - Documentation of Processes and Procedures
  - Hired Full-time FOG Program Inspector
  - Revised & Re-implemented Chemical Root Program
  - Development of SAMPs
  - Grid scheduling system
  - PACP Coding



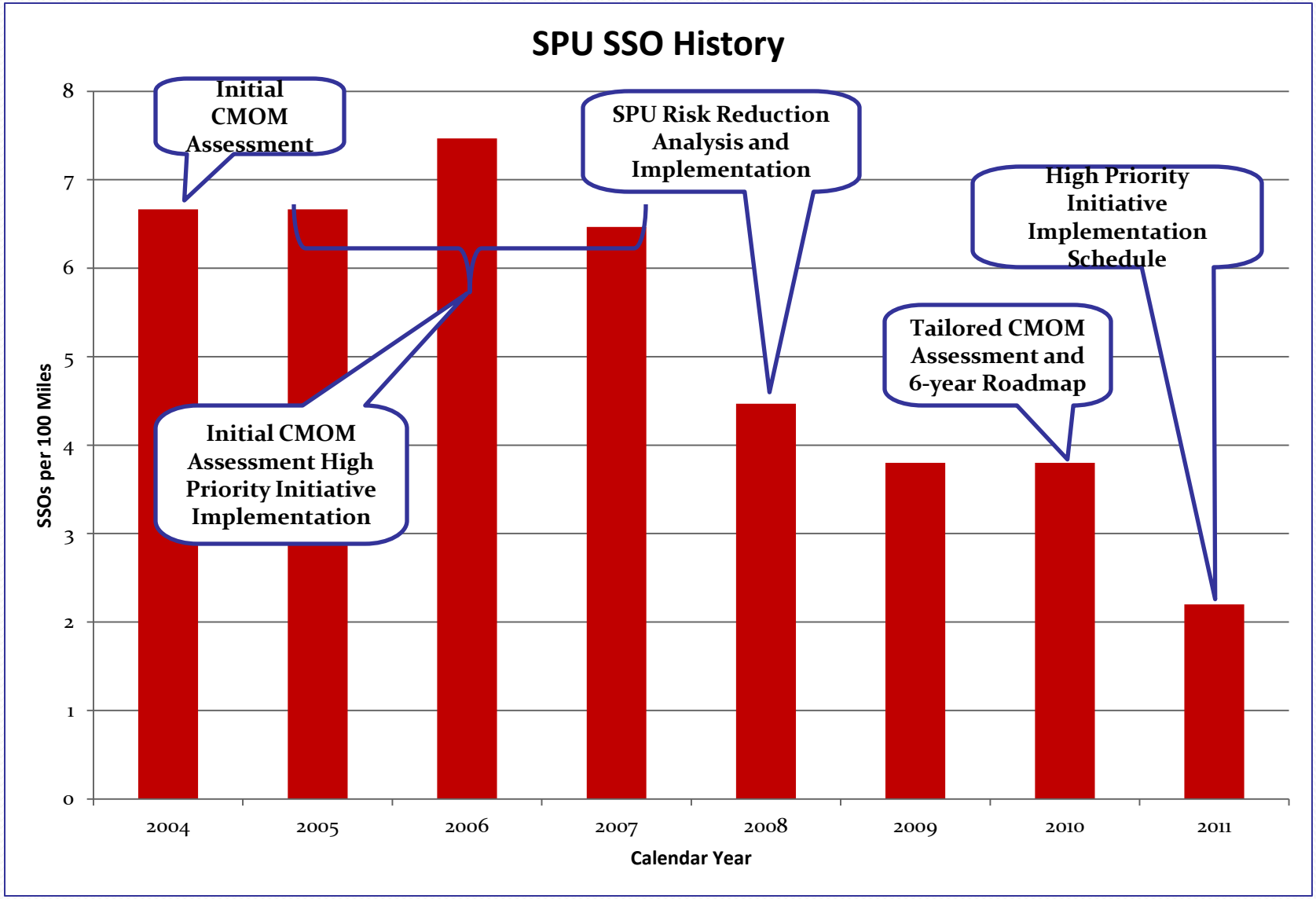
Began SSO Reduction Strategy (2008)

Examples:

- Mined existing data
- Found pipes needing cleaning and cleaned them
- Refocused CCTV program on SSO reduction



CMOM History at SPU



2010-2016 Plan Development "CMOM Roadmap"

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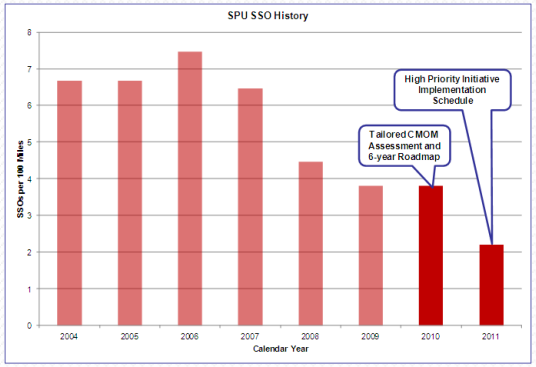
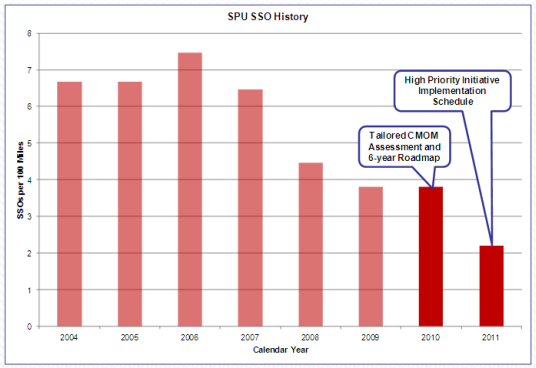
Tailored CMOM Assessment and Roadmap Development (2010)

- Development of 6-year Roadmap (2011-2016)
  - Included interviews, opportunity identification, workshops
- Began implementation of the high priority initiatives for 2011

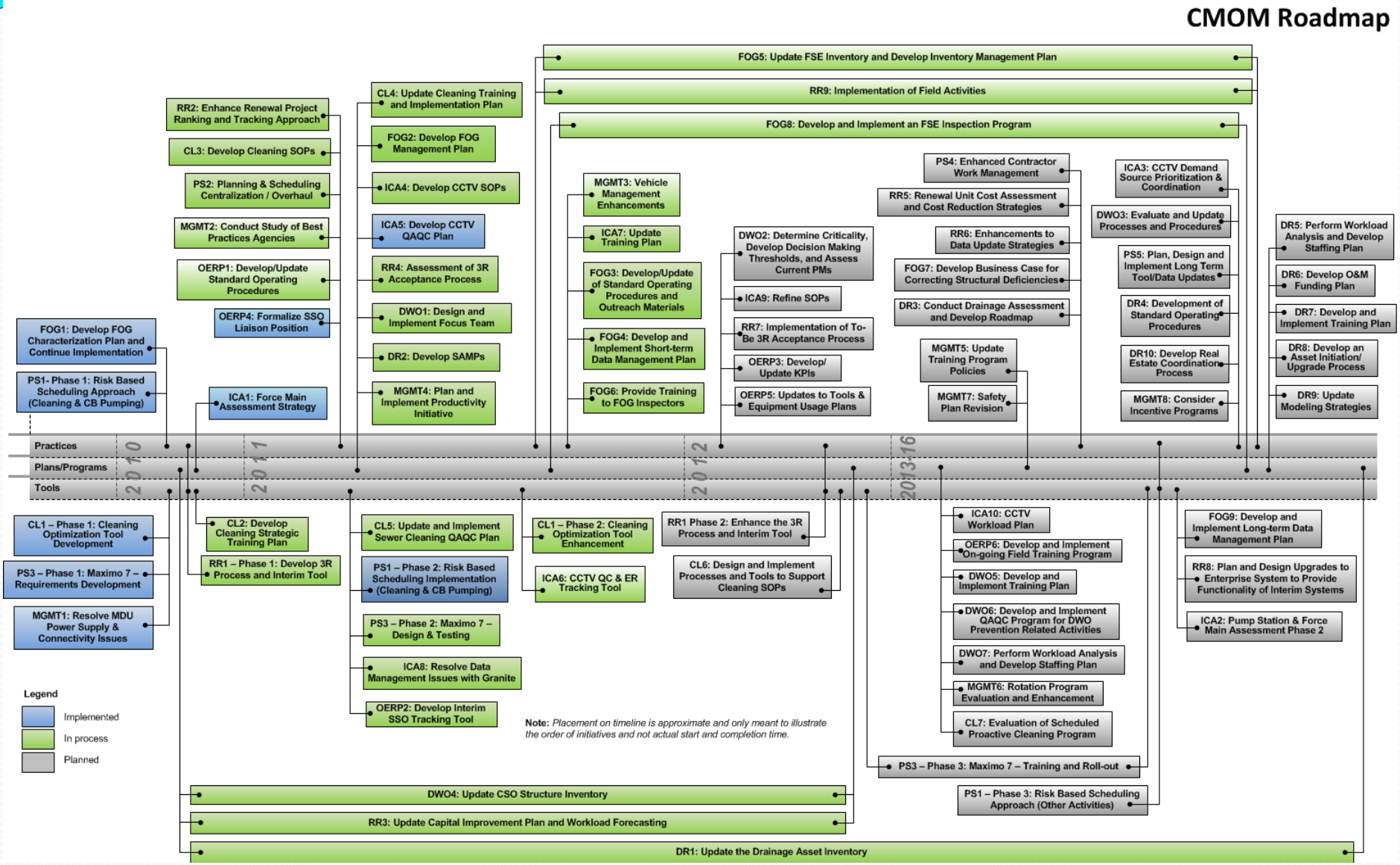


Focus Areas

- Sewer Cleaning
- Planning/Scheduling
- FOG
- CCTV/Condition Assessment
- Renewal Program
- SSO Response
- DWO Prevention
- Drainage
- Capacity
- Management



CMOM Roadmap 2010-2016



Sewer Cleaning Example:

Frequency Optimization Tool COTools

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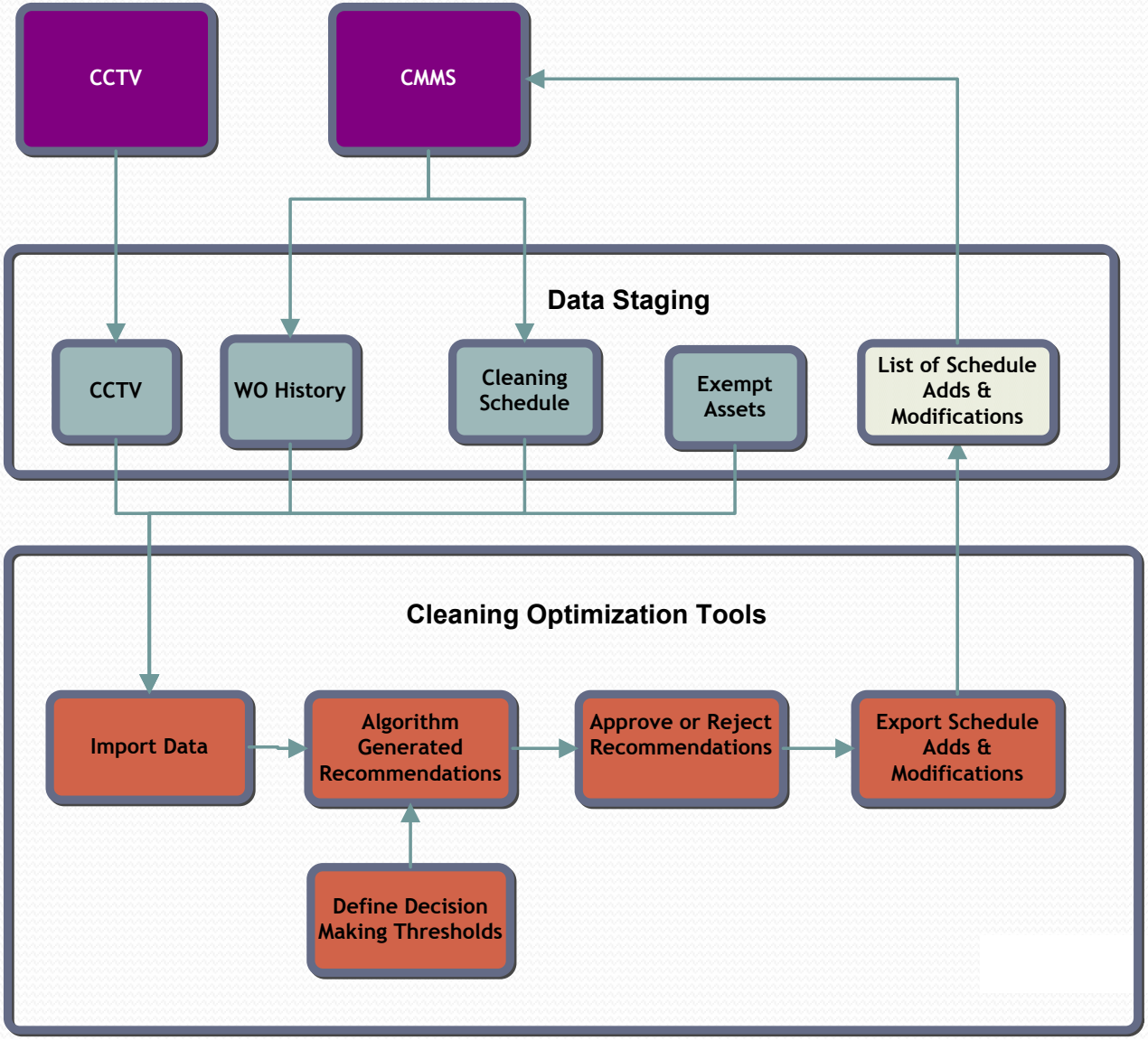
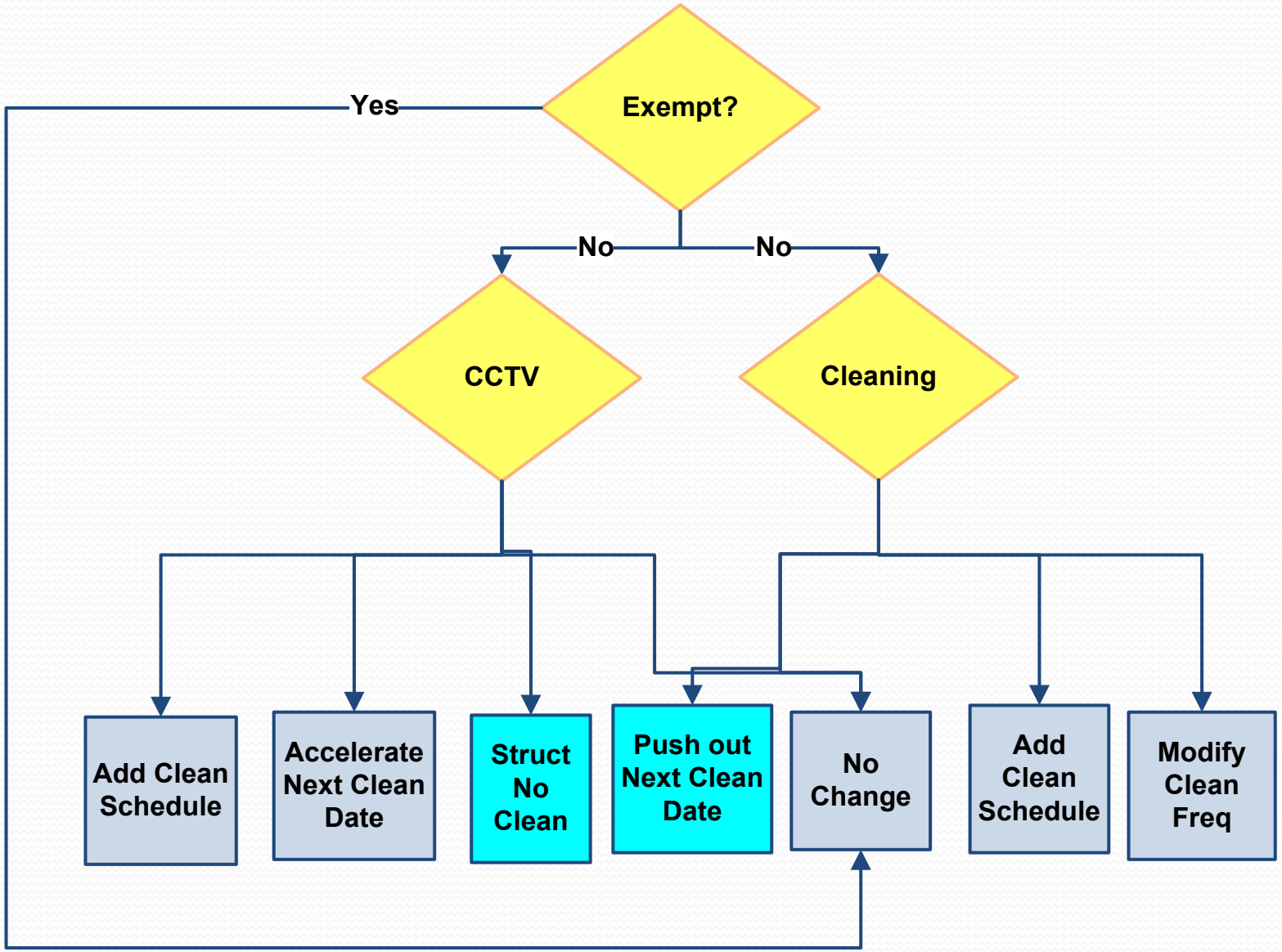
Frequency Optimization Tool Overview

- Inputs: All CCTV and Cleaning data
- COTools processes data through an algorithm to generate recommendations
- Outputs:
  - Recommendation Types
    - PM Frequency Modification
    - New PMs
    - Modify Next Cleaning Date for high risk assets
  - Asset History Viewer to support recommendation review

COTools Process



Decision Making Overview



Examples At SPU


Video Playback - 00:16:24/00:19:05 (part 1 of 1)
12/09/09 14:16
MH START: 016-502
MH STOP: 016-490
PipeHistory
EQNUM
WON
Event
Performed Da
Action
Findings
Comments
WOStatus
630134 2114595 Schedule Change 8/8/2011 Approved Schedule Moved
630134 2114595 CCTV 1/19/2010 CCTV RML 50,RML 20
630134 2114595 CCTV 1/12/2010 CCTV RMB 20,RMJ 5,
630134 2114595 CCTV 12/9/2009 CCTV RMB 40,RTL 20

ROOTS

PipeHistory

EQNUM	WON	Event	Performed Da	Action	Findings	Comments	WOStatus
635645	2562594	Schedule Change	8/15/2011	Approved		Schedule Moved	
635645	2562594	CCTV	4/7/2011	CCTV	DAR 70,DSZ 30		
635645	2562594	CCTV	4/7/2011	CCTV	DAE 5,DAGS 5,		

DEBRIS

ROOTS & GREASE

CMOM Roadmap Focus Area

Renewal Program

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Repair, Rehabilitation, Replacement (3R) Approach

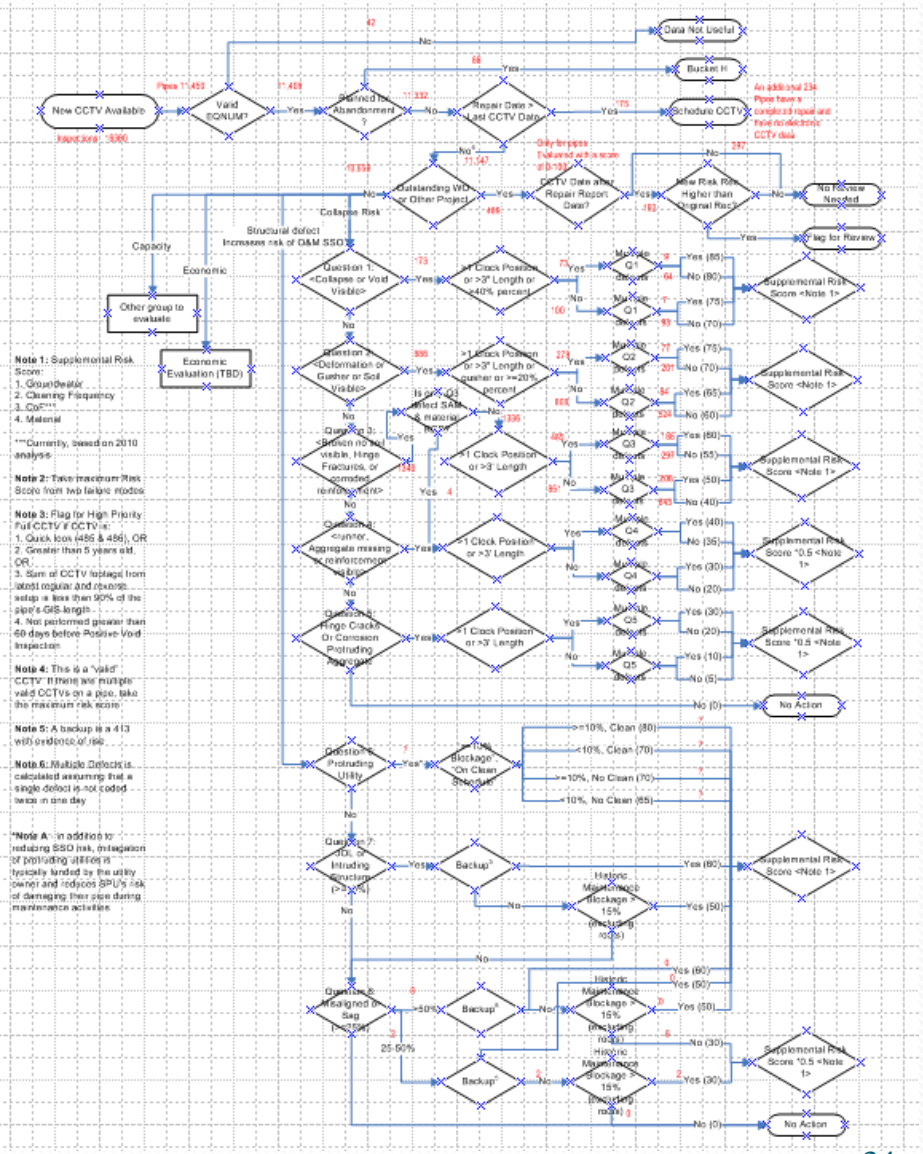
- 3R decisions based on AM strategy
- Repair when needed, NOT before
- Moving from “expert” method to documented 3R method

3R Tool

- Key Features:
  - Compiles various data sources
    - Condition assessments
    - Maintenance history
    - Asset attributes
  - Provides recommendations for renewal or monitoring based on existing data and SPU business logic
  - Supports work order package prioritization and creation

Criteria Considered

- Likelihood of failure
  - Defect type (e.g. hole)
  - Defect size
  - Count of critical defects
  - Presence of groundwater
  - Material
  - Cleaning frequency
  - History of grease and debris
- Consequence of failure
  - Backup / SSO History
  - Diameter
  - Proximity to water body
  - Roadway type
  - Near railroad
  - Within downtown corridor
  - Within slide area
  - Proximity to critical infrastructure (e.g. school, hospital, etc.)



Level of Service
Risk Threshold vs Action

ID	Relative Risk Score	Action	Rehab	Oppurtunity	Monitor
A	91-100	Emergency Response	X	X	
B	81-90	Urgent Response	X	X	
C	61-80	Rehab Needed	X	X	
D	51-60	Monitor (5yr)		X	X
E	41-50	Monitor (10yr)			X
F	21-40	Monitor (20yr)			X
G	0-20	Do Nothing			

ID	Relative Risk Score	Action Description
A	91-100	Immediate construction coordination. Mobilization ASAP. Construction complete in days to weeks.
B	81-90	Revise current contract scope to include the resolution of this issue. Construction complete in months.
C	61-80	Include in future contract scope. Construction complete in years.
D	51-60	Conduct CCTV in 5 years and reevaluate deterioration rate.
E	41-50	Conduct CCTV in 10 years and reevaluate deterioration rate.
F	21-40	Conduct CCTV in 20 years and reevaluate deterioration rate.
G	0-20	No Rehab or monitoring required.

CMOM Results

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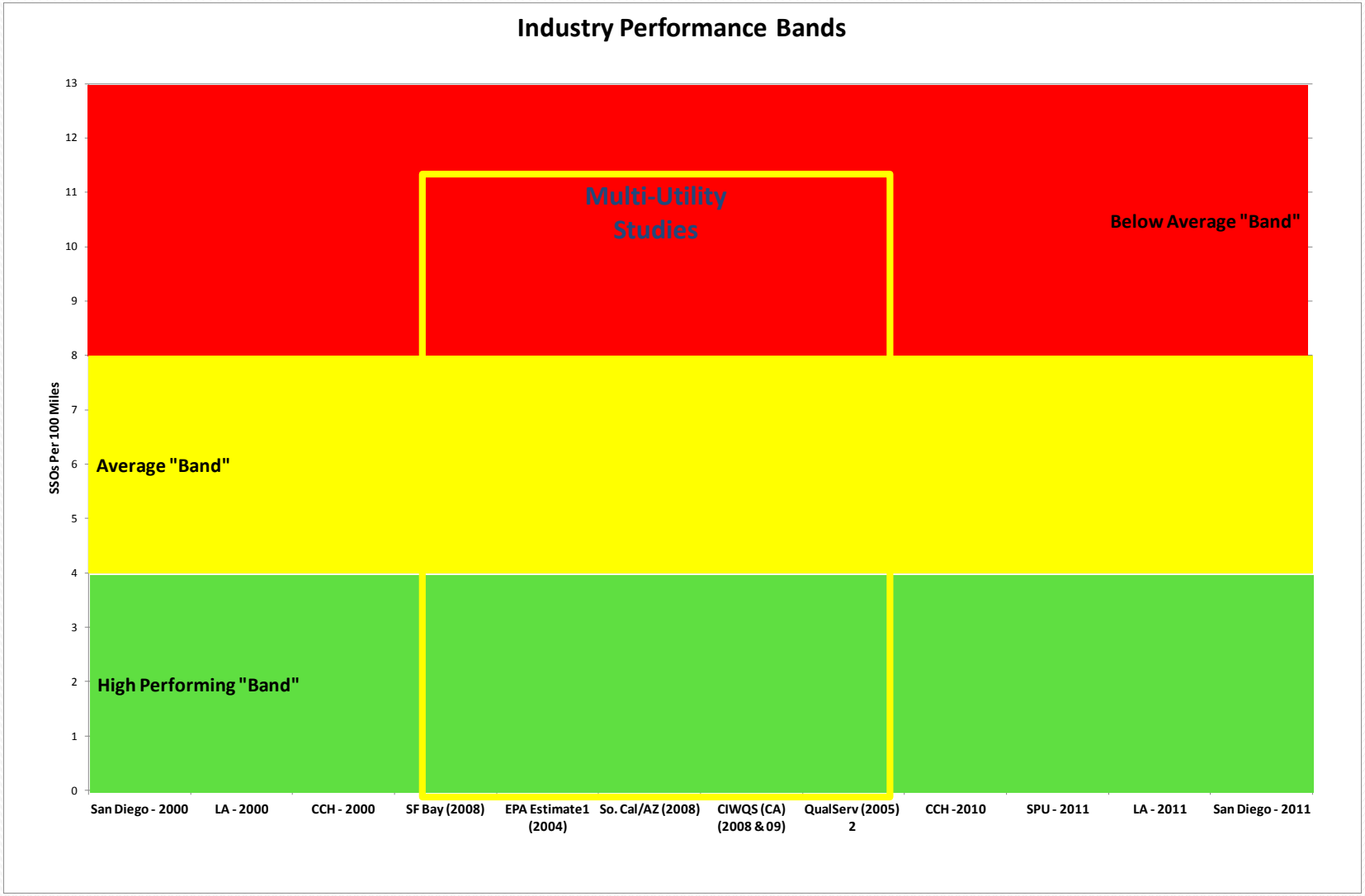
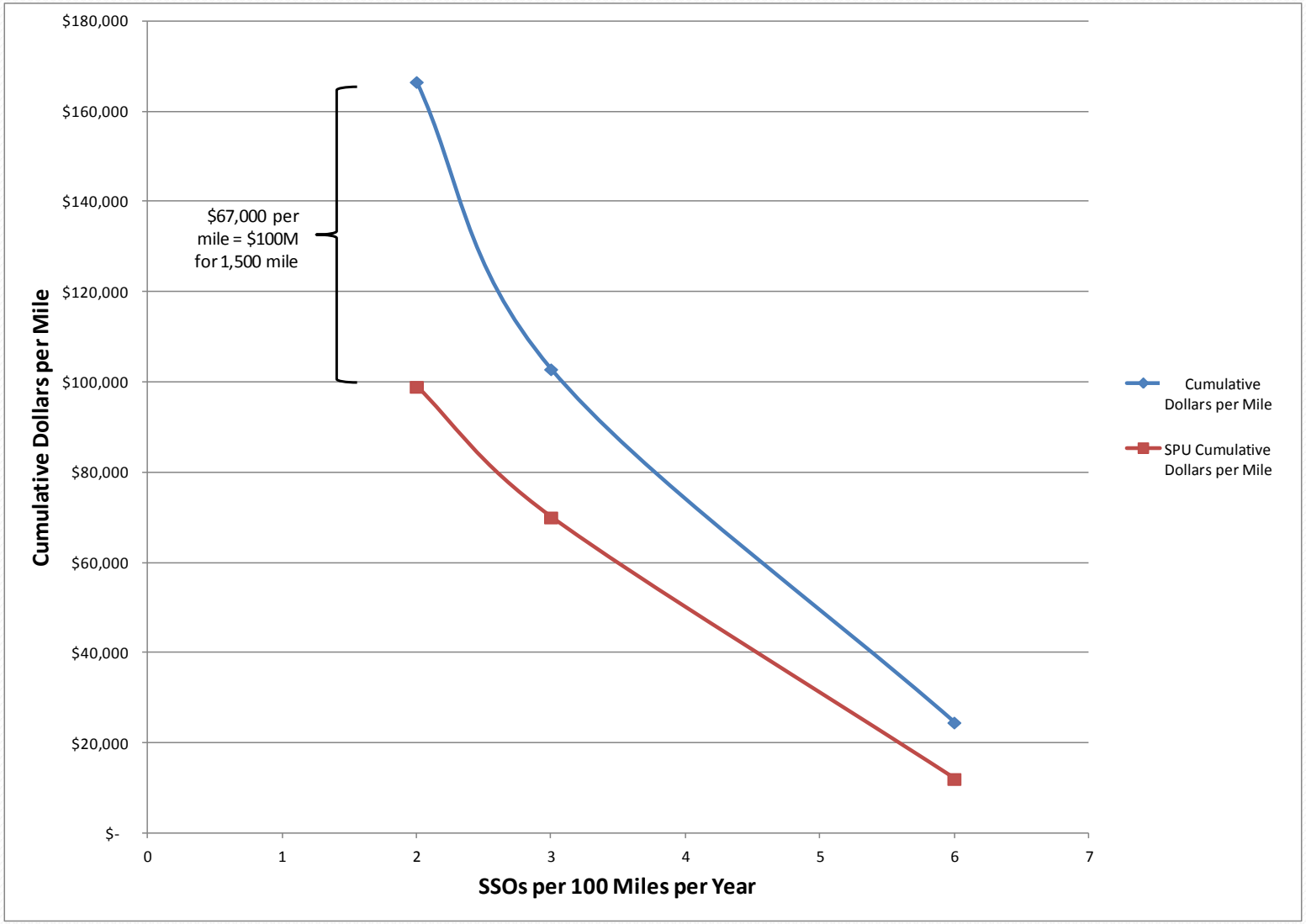
Opportunity for a Performance Based Approach



Two Approaches: Financial Impact



Questions

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