



Renewal & Replacement of Collection System Assets





Presentation Outline

- Existing Collection System & Condition
- 2015 Board Strategic Plan
- Replacement and Rehabilitation (R&R)

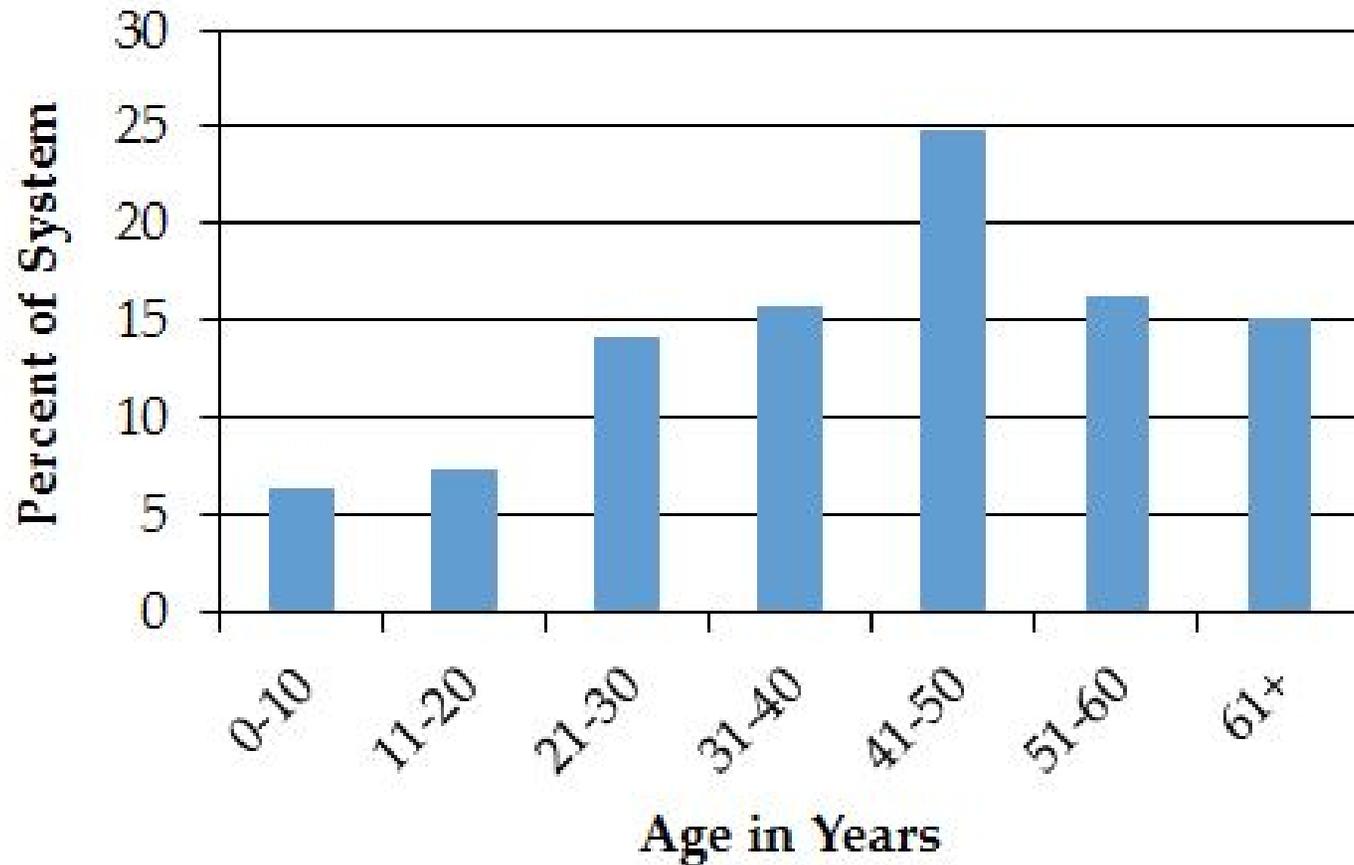


Existing Collection System

- Aging System
 - Large portions of the system installed in 1960s & 1970s
 - Large scale R&R was not necessary/priority in past decades when pipes were new
 - Observed failures in 50-60 year old mains, previously thought to have a 100 year service life



Age of Existing System





Replacement Time

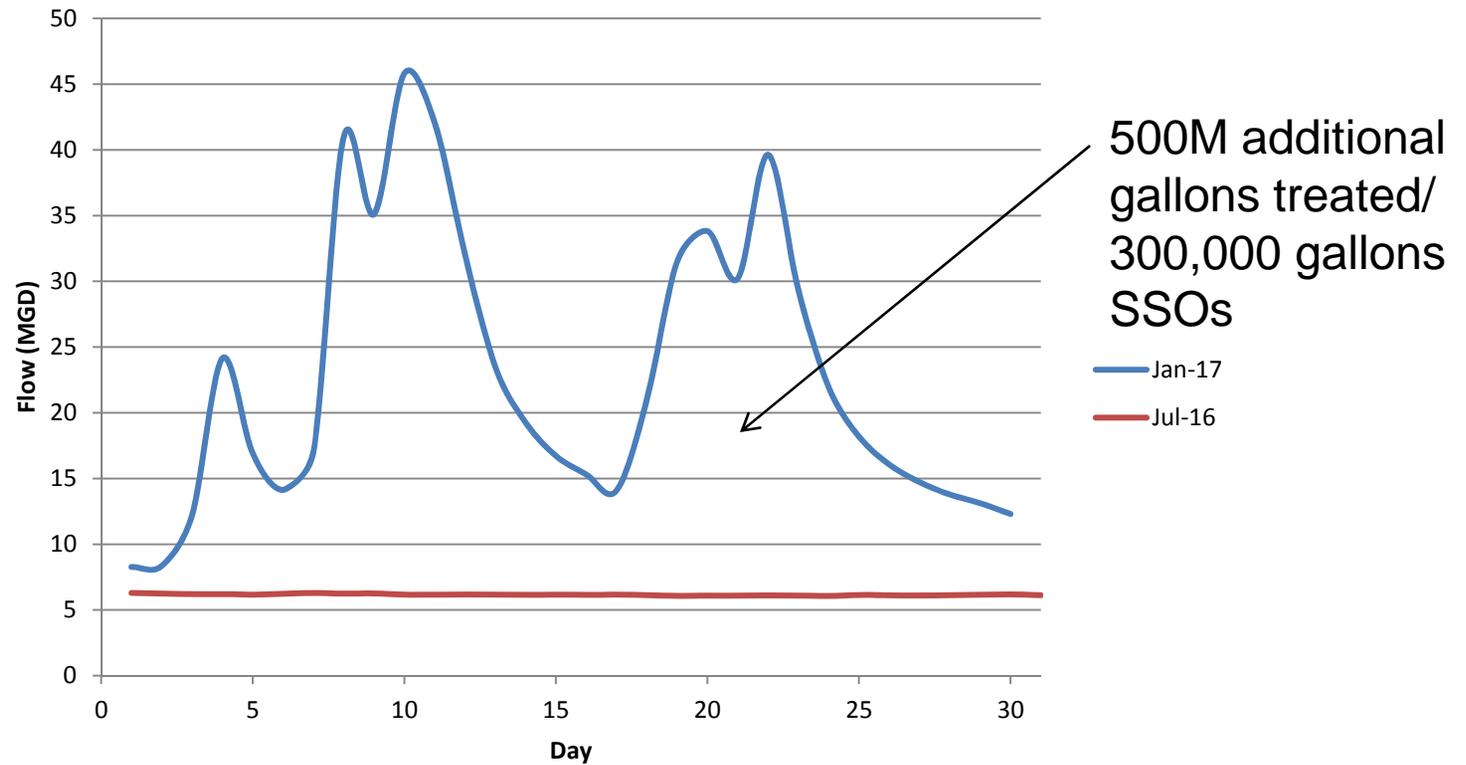
- 270 miles of mainline pipe
- 1.0% of the system is 2.7 miles

- 0.8% = every 125 years
- 1.0% = every 100 years
- 2.0% = every 50 years



Inflow and Infiltration (I&I)

Average Daily Influent Flow





2015 Strategic Plan

- Goal 1 – Infrastructure Reliability
- 1C Determine target for renewal and replacement (R&R) of sewer assets

NSD is averaging the replacement of 0.8% of its sewer assets annually, which equates to a 125 year replacement cycle. A target should be agreed upon for renewal and replacement, to set a standard/goal for the District and to build that target into rate setting.

Complete by June 30, 2016



2015/16 Board Decision

- Increased R&R/I&I from 0.8% to 2.0%
- Approved additional Collection System staff for more condition assessment
- Approved Asset Management
- Decision based on:
 - Age of current system
 - Existing pipe materials
 - Consequence of failure
 - Cost/Level of Service/Environmental Impacts



Benefits of Pipe Rehab

- Inflow/Infiltration (I/I) reduction
 - Decrease sanitary sewer overflows (SSO)
 - Decrease treatment costs
 - Decrease pond storage issues in winter
- Failure avoidance
 - Minimize costly emergency repairs
 - Decrease environmental impacts
 - Creeks/rivers
 - Traffic
- Avoid projects to increase collection system and treatment plant capacity



Costs: Rehab vs. Repair

<u>Main St (2nd to 3rd)</u>	<u>44-years old 8" AC</u>
Repair cost \$90,100	128 feet of open cut repair \$636 per foot + CIPP lining
Est Rehab cost \$8,700	290 feet of CIPP \$30 per foot
<u>Silverado Resort</u>	<u>51-years old 6" AC</u>
Repair cost \$81,000	100 feet of open cut repair \$370 per foot + alignment change
Est Rehab cost \$12,740	260 feet of CIPP \$49 per foot



Recent Repair Costs

Jefferson St (near Old Sonoma) 64-years old Clay

Repair cost \$34,300 Open cut of 2 laterals

Est Rehab cost \$3,620

2 lateral rehab CIPP
\$1,820 each

3rd Street (East of Jefferson) 60-years old 8" Clay

Repair cost \$15-20k

Open cut repair
Issues with old rail car tracks
Recently paved street

Est Rehab cost \$2,000

Spot liner
\$2,000 each



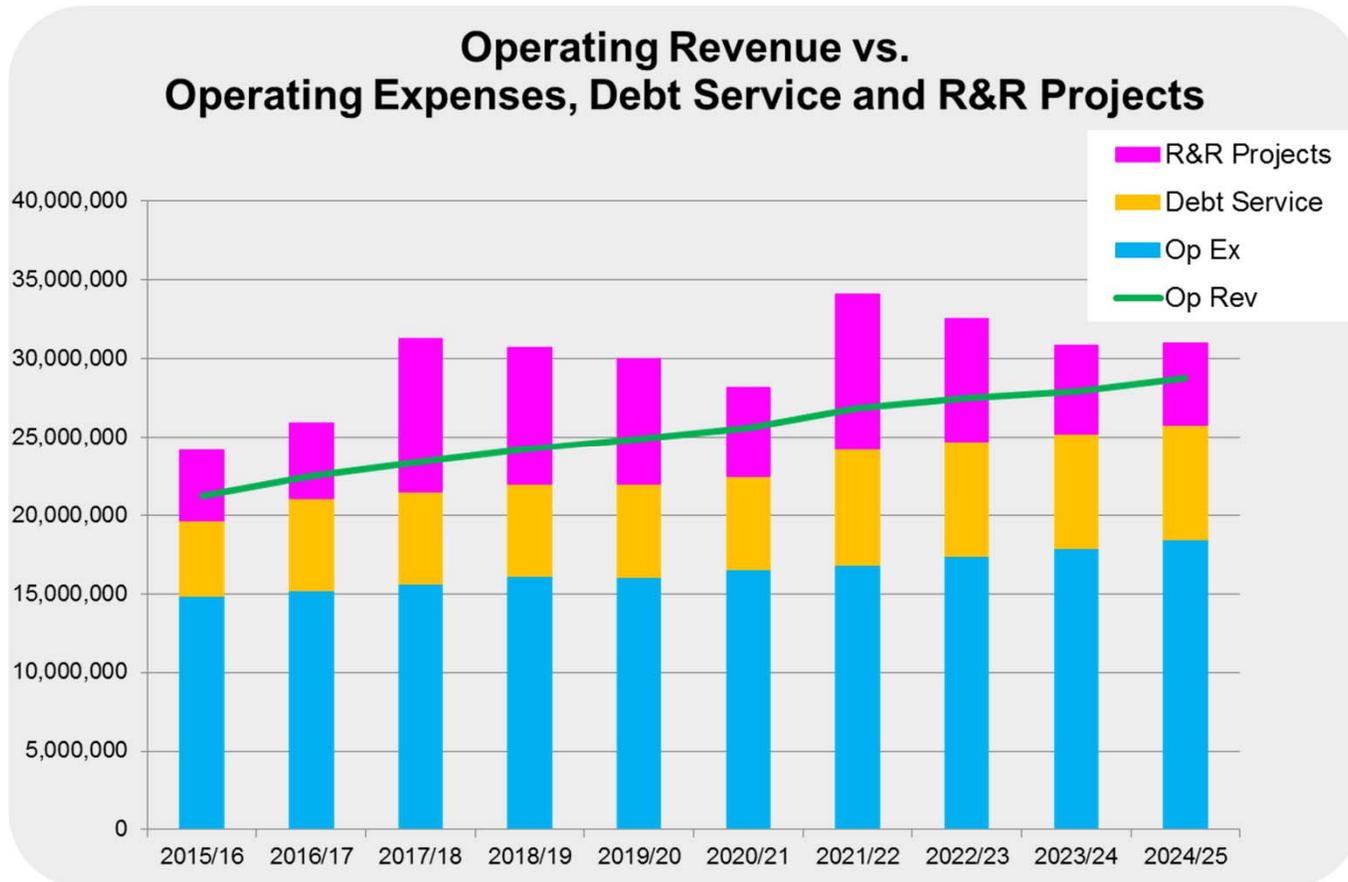
R&R Project Prioritization

- Use Asset Management to prioritize R&R
 - Consequence/Probability of Failure
 - Condition Assessment/CCTV
 - Locations of SSOs
 - Frequency of Maintenance
 - Pipe failure locations
 - Flow Monitoring
 - Nighttime reconnaissance
 - Manhole inspections
 - Smoke Testing
- R&R based on actual conditions



10-Year Forecast Prior to 2016 Rate Increase

As of Fall 2015

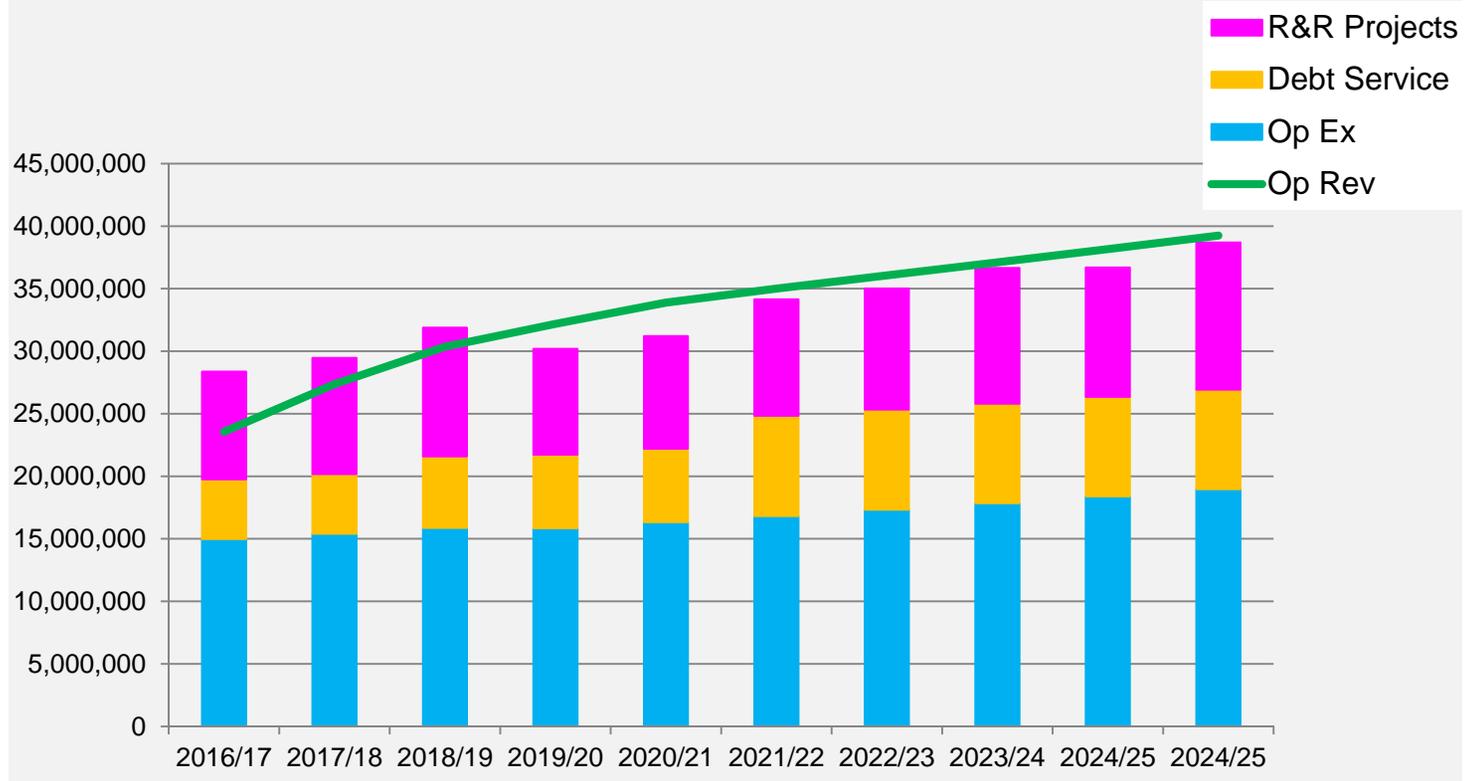




10-Year Forecast with 5-year Rate Increase

As of Spring 2017

**Operating Revenue vs.
Operating Expenses, Debt Service and R&R Projects**





Planned Projects

- 2017 – Large rehab project in West Napa Basin (\$5M)
- 2017 – Soscol/Sousa Trunk (\$1M)
- 2017 – Manhole rehab in Basin H (\$365k)
- 2018 – Northwood Subdivision (\$2.6M)
- 2018/19 – Browns Valley Trunk (\$15M)
- 2019/20 – Pear Tree/Lake Park (\$5.9M)
- 2020/21 – Basin F (southeast Napa) (\$6.1M)



Reasons to be Proactive

Emergency repairs are costly and disruptive to the community

Failures and capacity issues can lead to sewer overflows

Regional Board comments during NPDES permit approval



Questions & Discussion