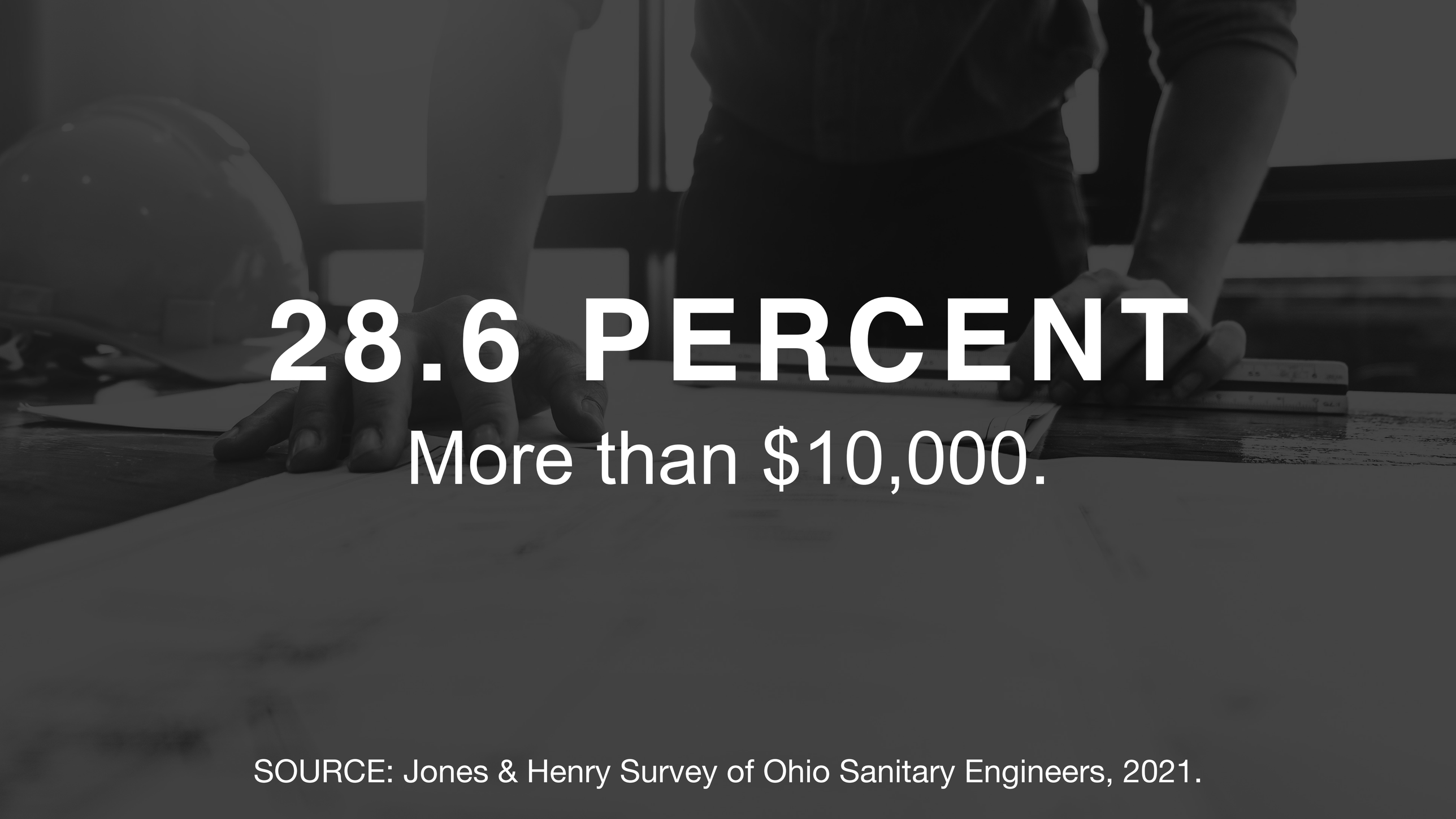
OptimizerPS™

VIRTUAL PUMP STATION

INTRODUCTION TO COLLECTION SYSTEMS INNOVATION
AND THE FUTURE OF PUMP STATION ASSESSMENT

QUESTION:

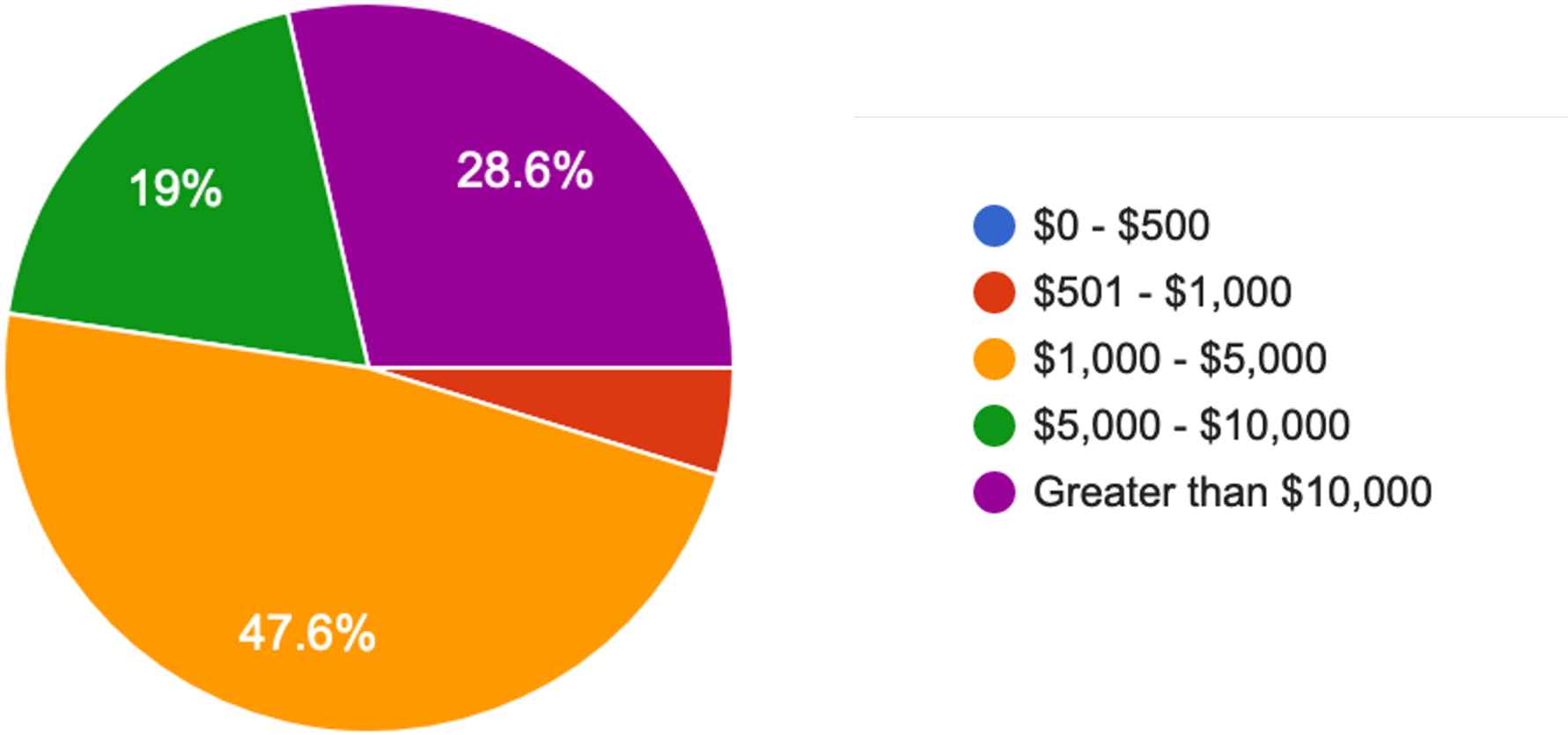
How much do you spend annually on pump station maintenance?



28.6 PERCENT

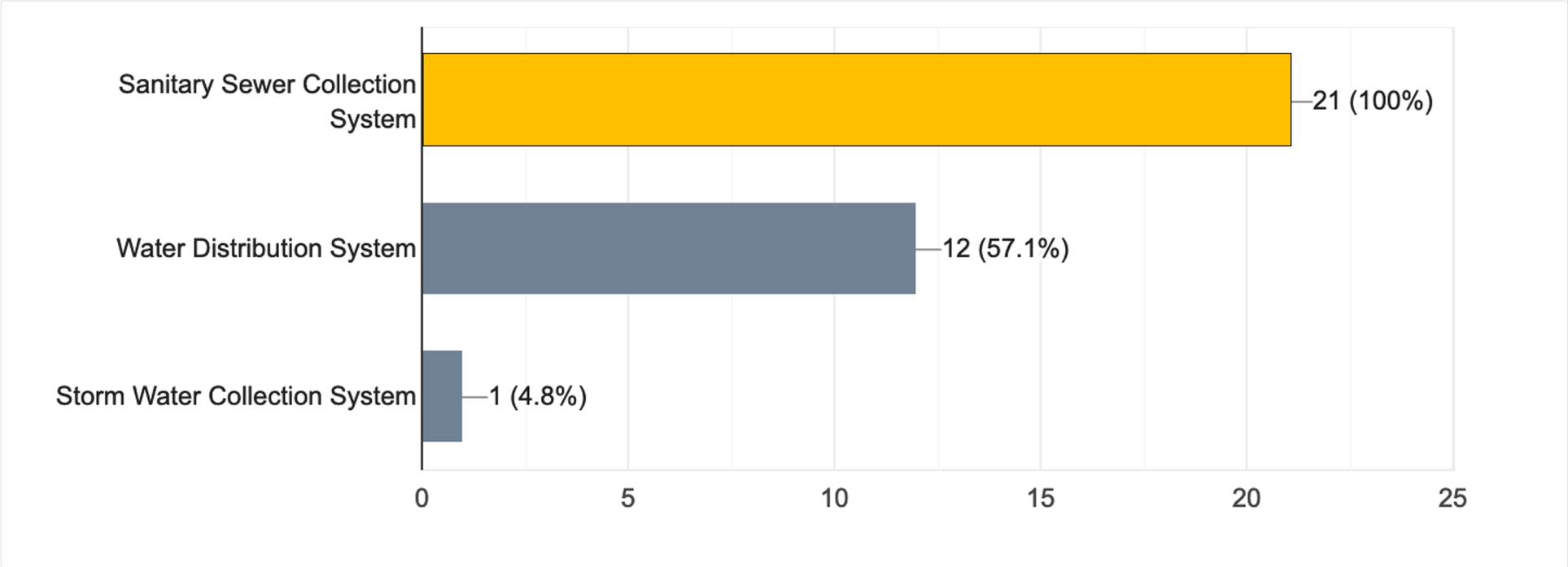
More than $10,000.

SOURCE: Jones & Henry Survey of Ohio Sanitary Engineers, 2021.



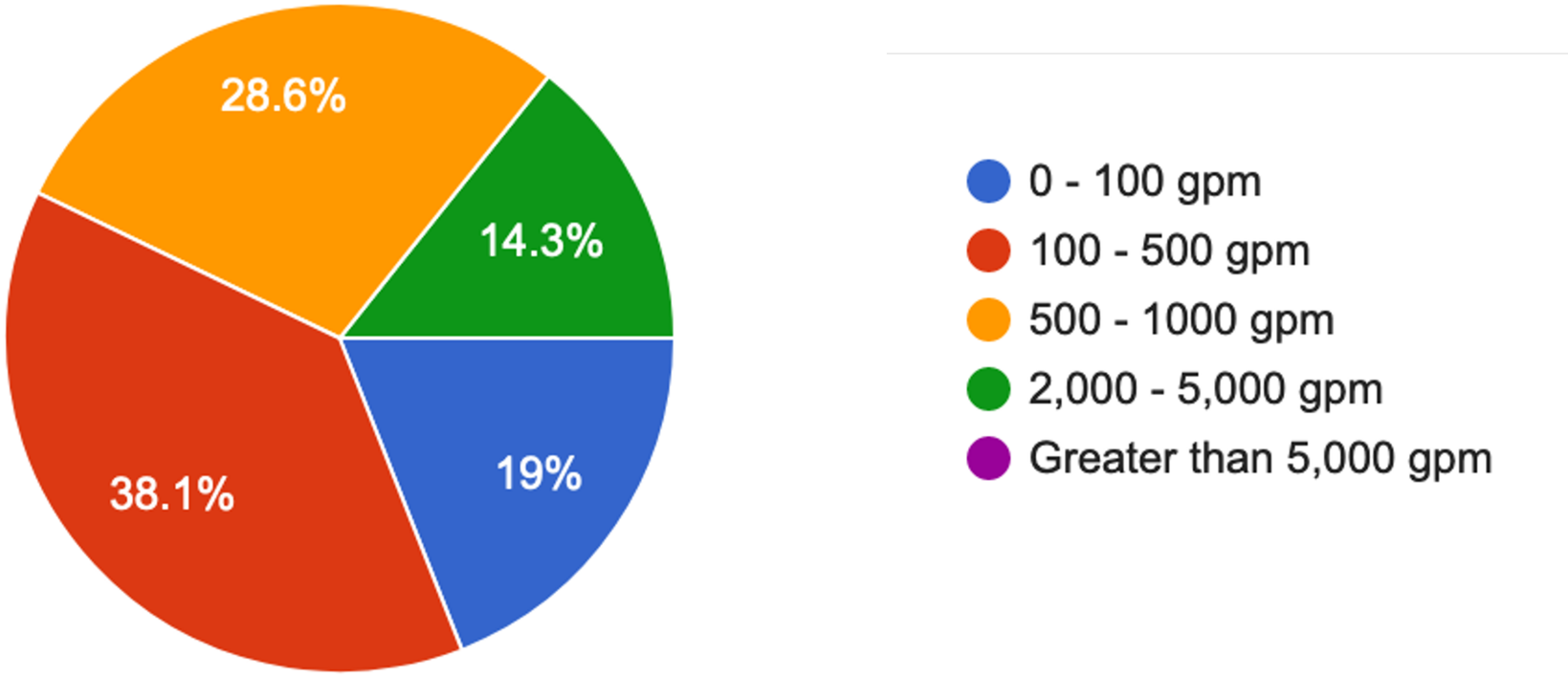
SOURCE: Jones & Henry Survey of Ohio Sanitary Engineers, 2021.

Type of Pumping



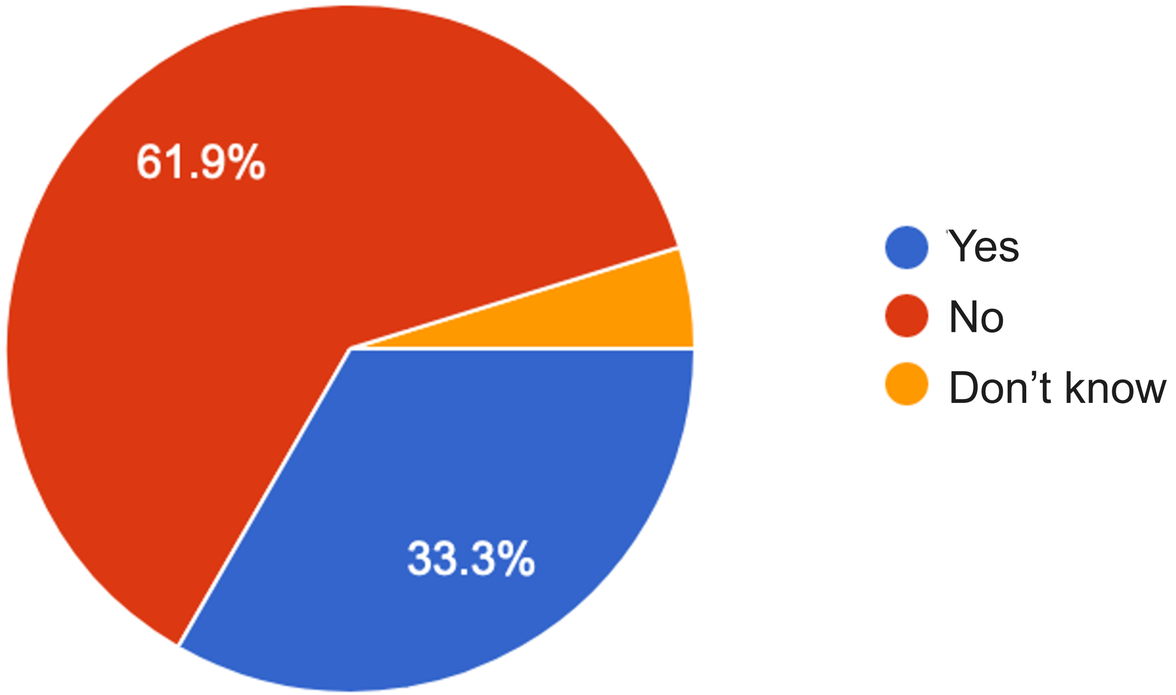
SOURCE: Jones & Henry Survey of Ohio Sanitary Engineers, 2021.

Pump Station Capacity



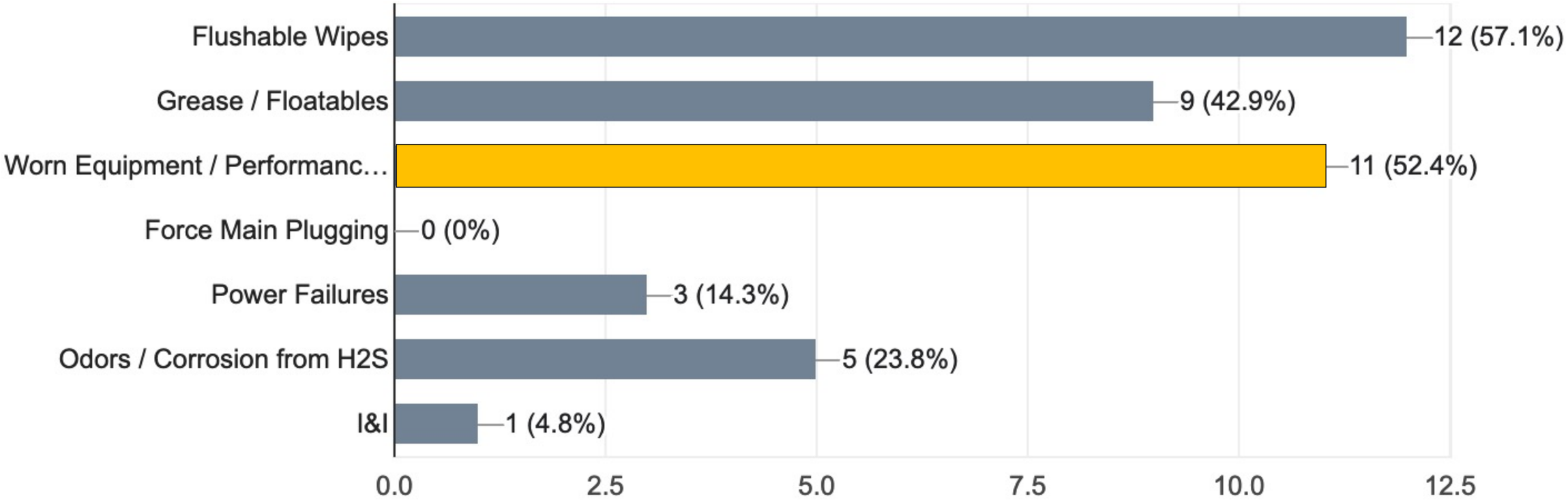
SOURCE: Jones & Henry Survey of Ohio Sanitary Engineers, 2021.

Do you jet clean force mains?



SOURCE: Jones & Henry Survey of Ohio Sanitary Engineers, 2021.

Most Common Maintenance Problems



SOURCE: Jones & Henry Survey of Ohio Sanitary Engineers, 2021.

IMAGINE

A low-cost way to predict and investigate these problems.

What if you could…

- Plan the replacement of equipment proactively?
- Check force mains for performance?
- Avoid costly emergencies?
- Optimize pump operation?


145
92
WILLIAM, heart attack survivor.
THIS IS WHAT
HIGH BLOOD PRESSURE
LOOKS LIKE.
Go to
LowerYourHBP.org
before it's too late.
Ad Council
American Heart Association
American Stroke Association
AMA
AMERICAN MEDICAL ASSOCIATION

TECHNOLOGY

Like it or not, digital and automation innovations are leveling the barriers to entry for all industries.

As a critical component of a wastewater collection system, the pump station is potentially **a single point of failure.**

Hey, it’s pumping water, so it must be fine.

The running-your-infrastructure-into-the-ground approach is no longer sustainable.

A PUMP

MOVES WASTEWATER FROM

a lower to a higher elevation

– by adding –

ENERGY

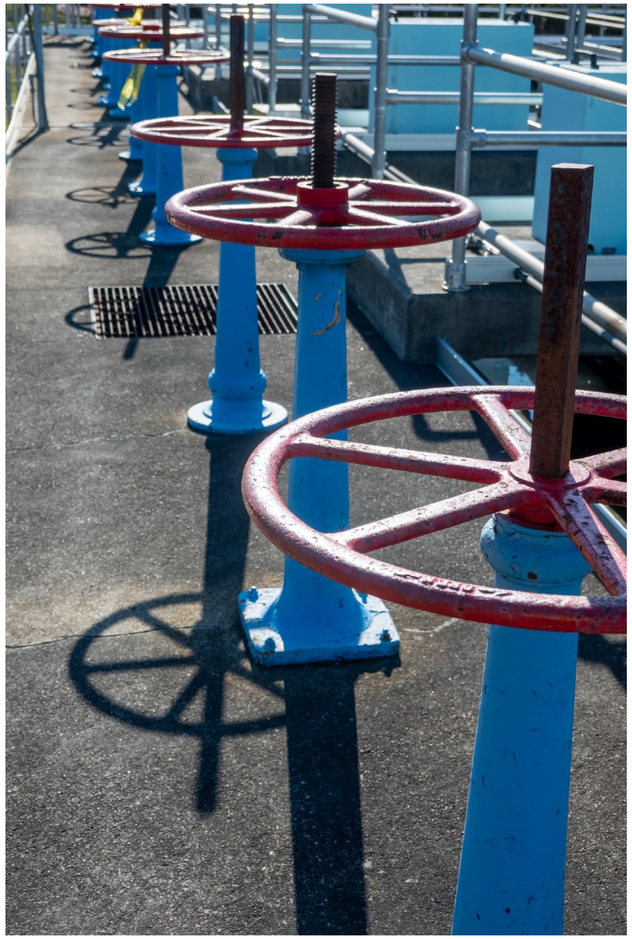
2 PERCENT

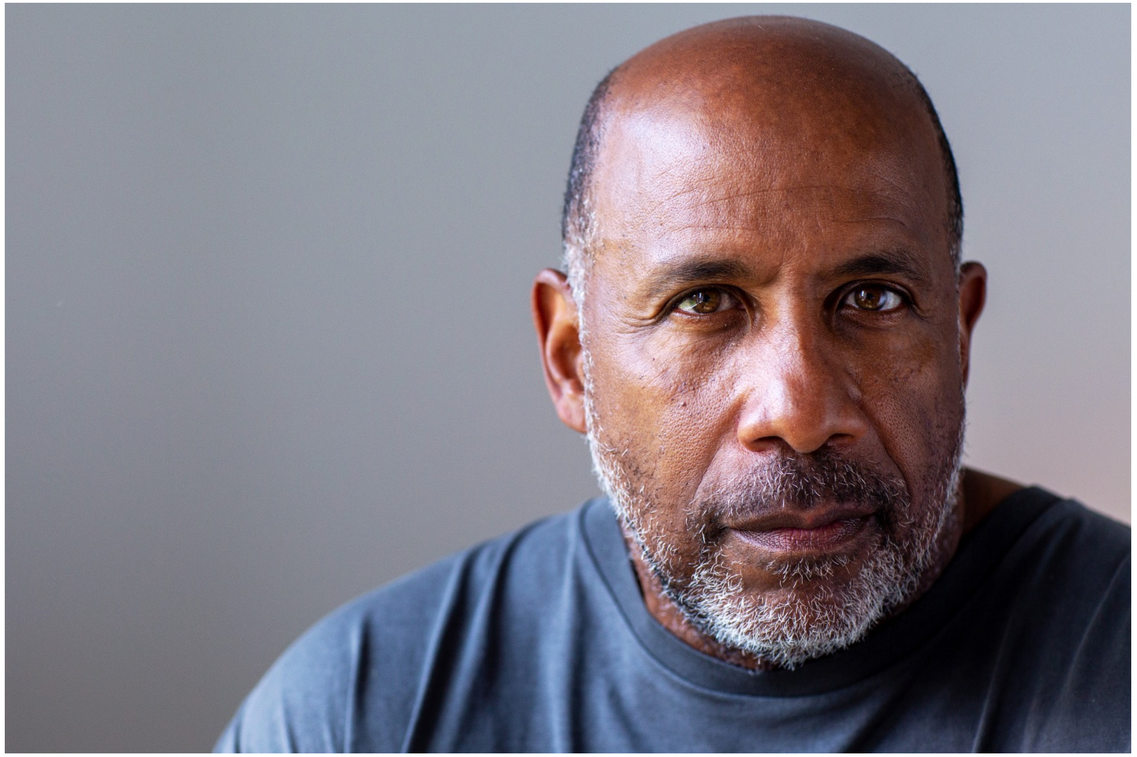
US electric consumption used to move and treat water and wastewater.

SOURCE: Hydraulic Institute

Opportunities Await

- ✓ Save energy
- ✓ Boost reliability and up-time
- ✓ Reduce wear
- ✓ Lower maintenance costs
- ✓ Minimize environmental impacts
- ✓ Improve MTBF and MTTR metrics





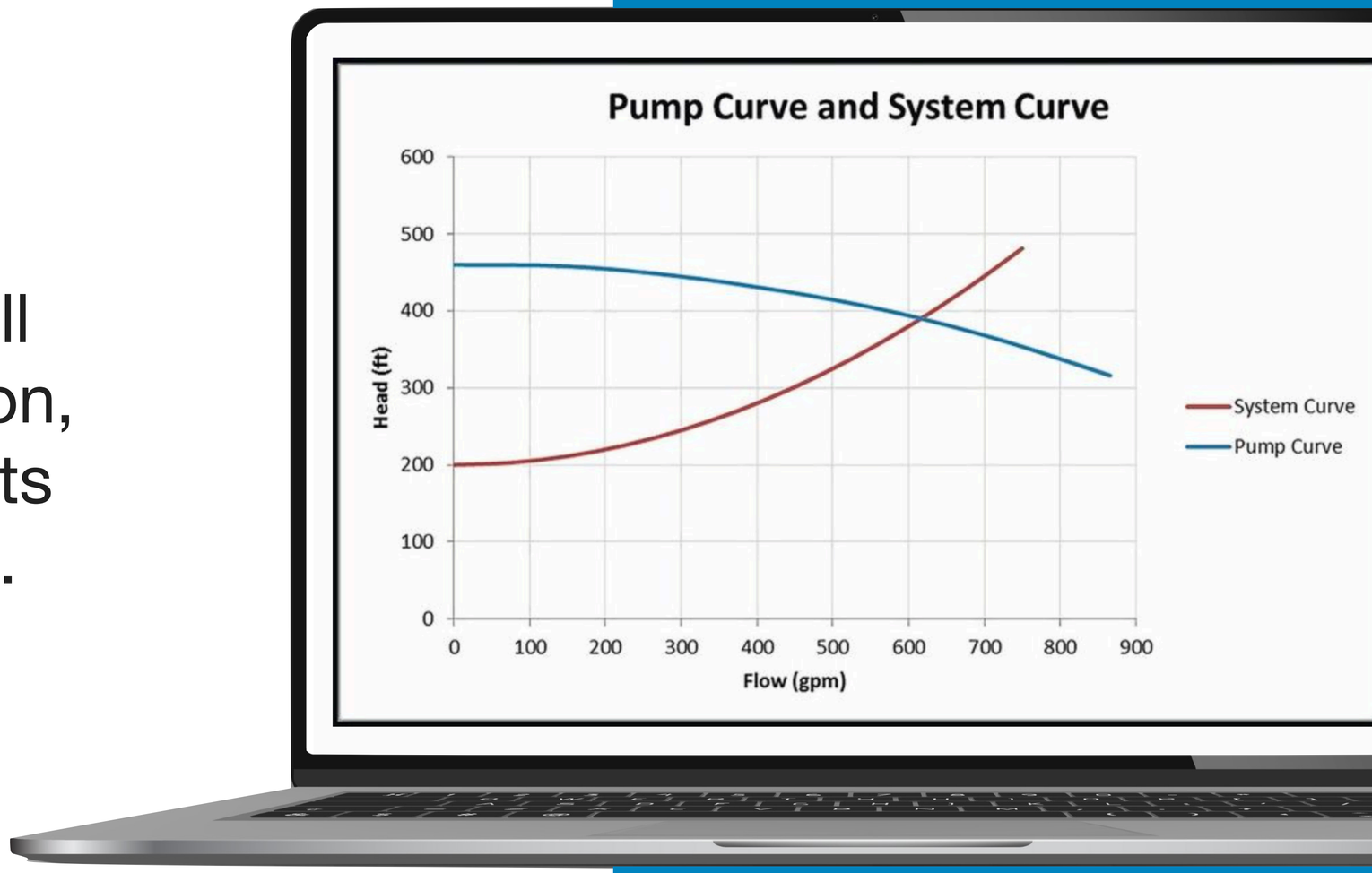
“When you’re on the forefront, you can see what the next innovation needs to be. When you’re behind, you have to spend your energy catching up.”

—Robert Noyce, Intel Co-founder

PUMP STATION ASSESSMENT

HYDRAULIC INSTITUTE
PSAP
CERTIFIED

A good assessment will consider the entire station, including its components and their performance.



PUMP STATION ASSESSMENT

- Pump Performance
- Valve Operation
- Force Main Characteristics
- Level Systems
- Flow Meters
- Wet Well
- Dry Well
- Operational Concerns

A pump system assessment aims to identify **energy** or **capital savings** with prioritized operational, equipment, or project-level improvements.

INTRODUCING

OptimizerPS™

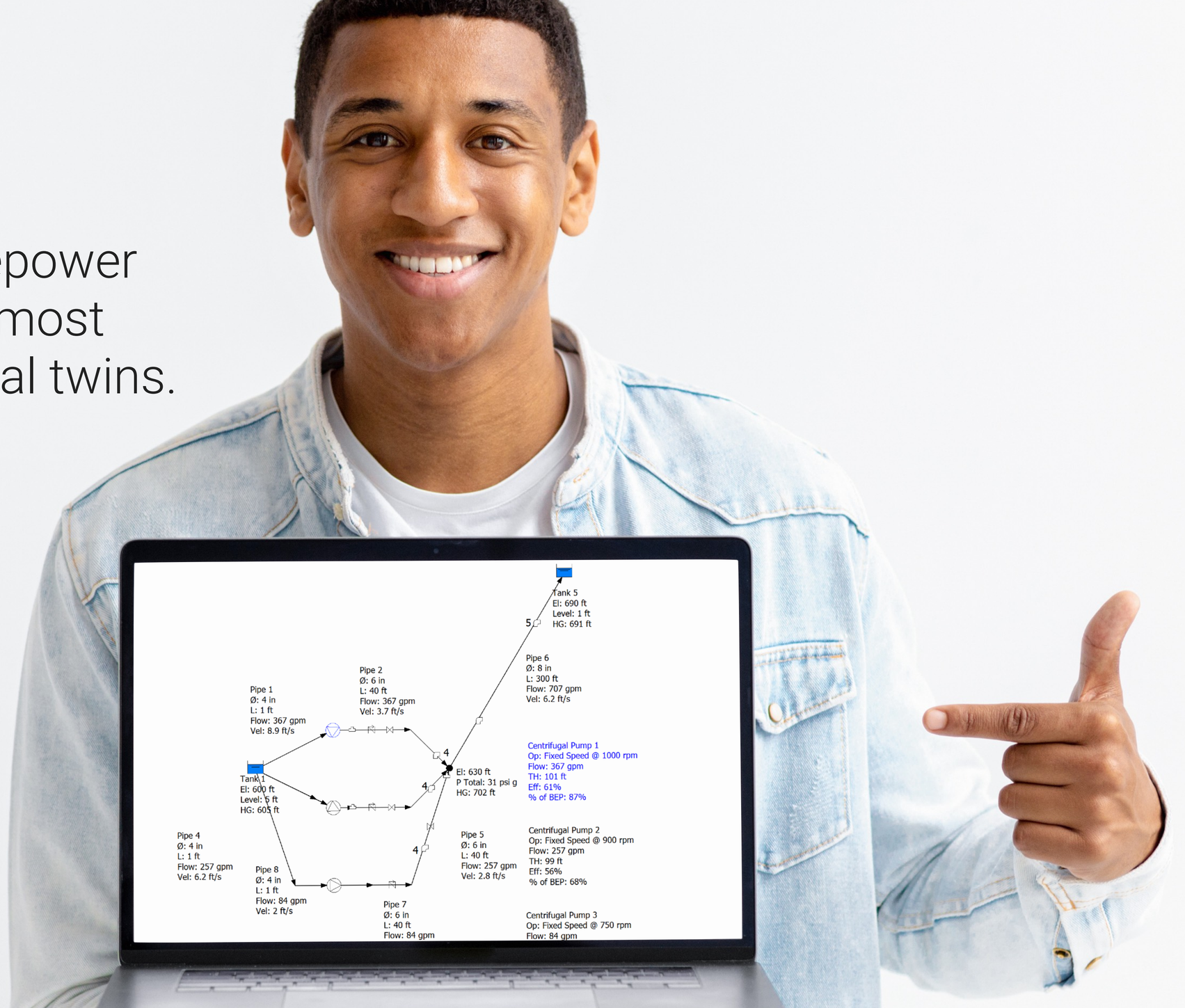
VIRTUAL PUMP STATION

A Virtual Pump Station is a **data-driven** model representing the pumping system—tuned to operate like the actual pump station.

RATHER THAN SIMPLY DOCUMENTING PERFORMANCE AND CATALOGING THE OBSERVATIONS, OPTIMIZER**PS** TAKES PUMP STATION ASSESSMENT TOOLS TO THE

NEXTLEVEL

Using robust modeling software, **OptimizerPS** possesses more horsepower and functionality than most spreadsheet-style digital twins.




a current
snapshot

CHECK AGAINST ORIGINAL DESIGN

“Procurement and selection of the most suitable pumping equipment…is made even more difficult by high pressure [sales tactics] from an overdeveloped industry.”

– Roger Walker

Pump Selection: A Consulting Engineer’s Manual

Virtually

TRY BEFORE YOU BUY

MOST IMPORTANTLY

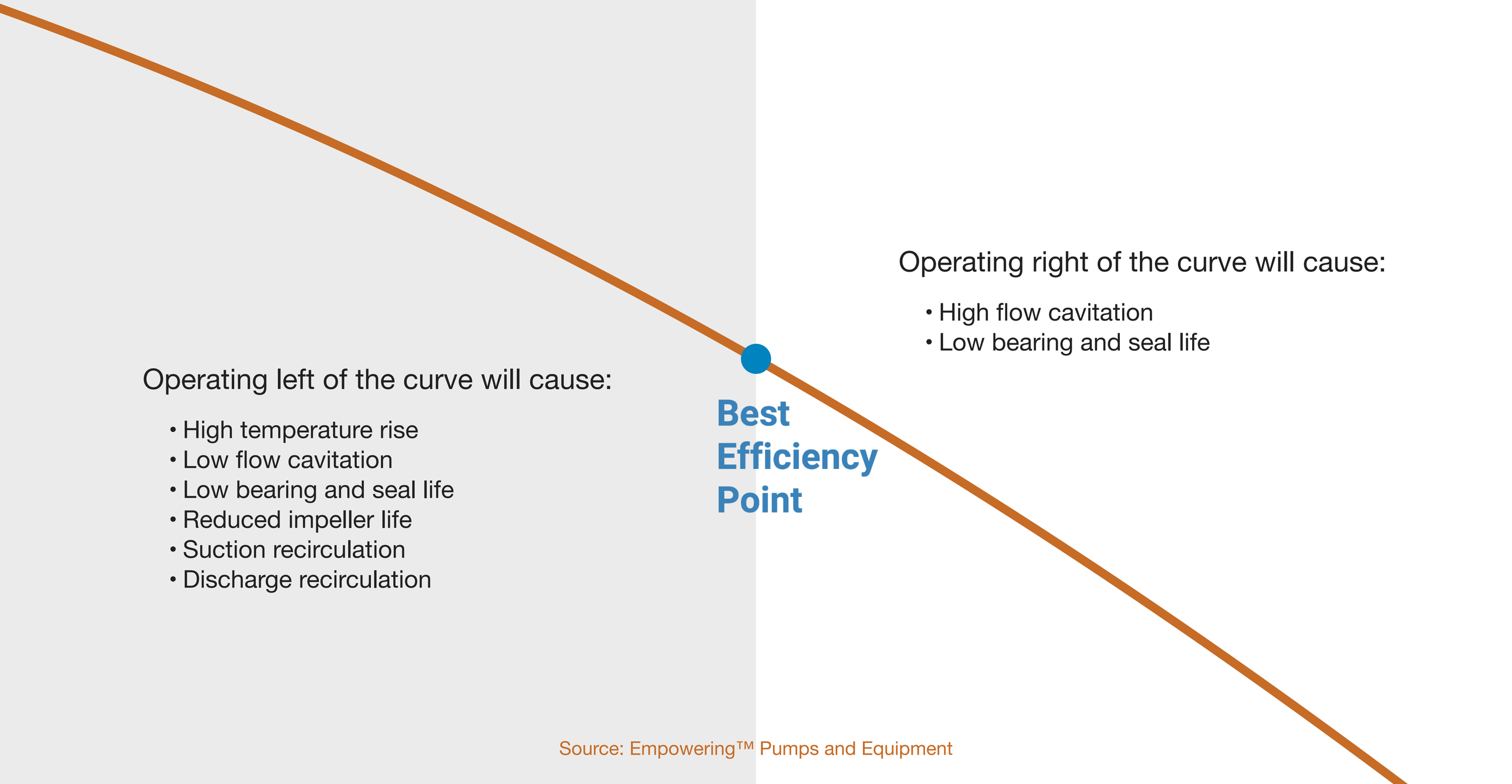
Recapture operating funds lost to poor efficiency.

MOST PUMP SYSTEMS OPERATE AT

40%

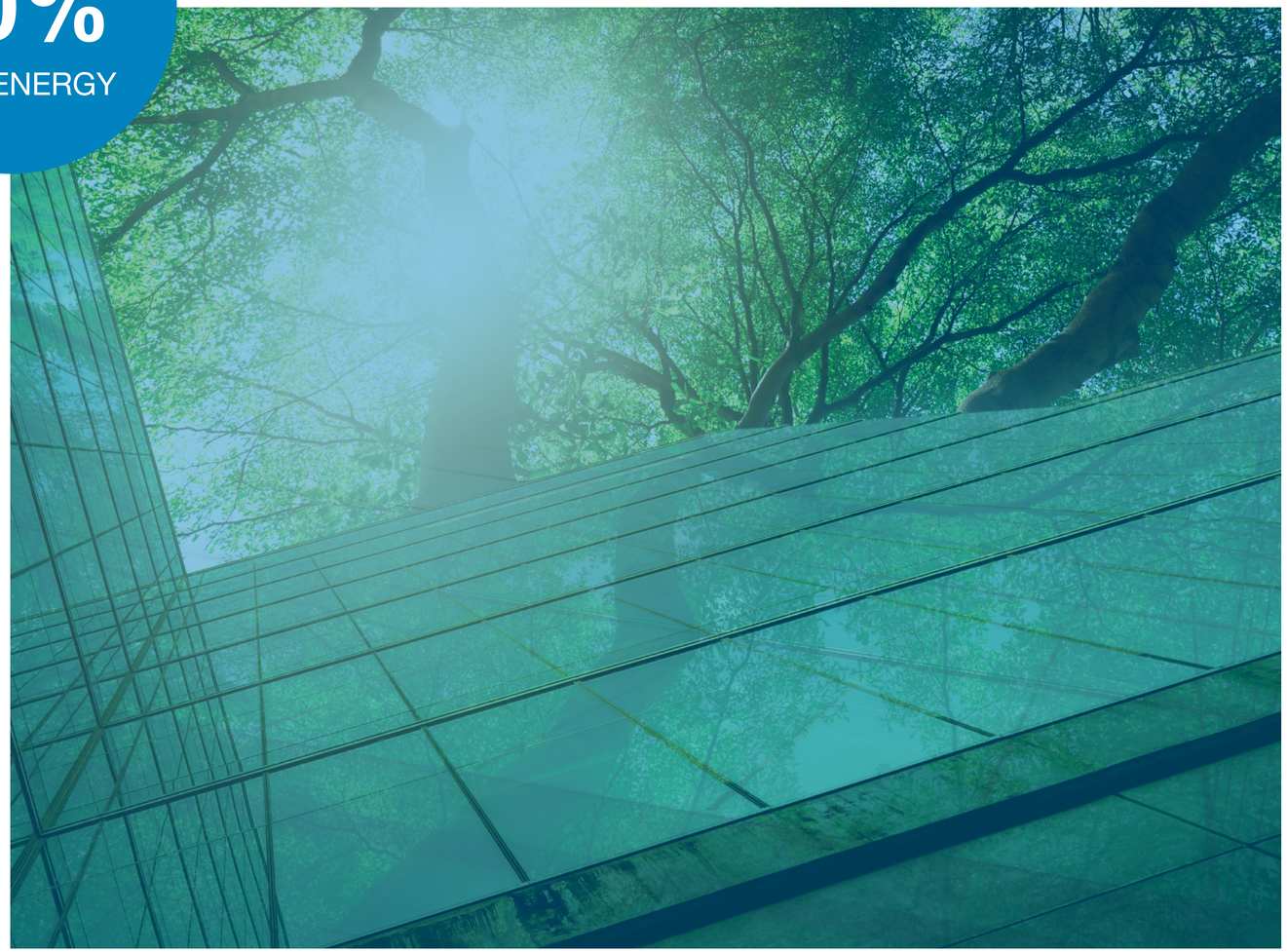
EFFICIENCY

SOURCE: Hydraulic Institute



Source: Empowering™ Pumps and Equipment

UP TO
60%
LESS ENERGY



Energy Efficiency

Energy savings of 20-60 percent are routinely possible in the centrifugal pump systems found in most water and wastewater applications.

SOURCE: Hydraulic Institute

SAMPLE CASE STUDY

OptimizerPS™
VIRTUAL PUMP STATION

Objectives

- Pump Station Assessment
- Snapshot of Current Conditions
- Proactive Evaluation

Facility Scope

- Municipal Agency
- 20,000 customers
- Key Pump Stations
  - 2 Submersible
  - 1 Flooded Suction
  - 2 Self-Priming

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Pump Station #1: Submersible

(Constructed in 2006)

✓ No Issues Discovered

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VIRTUAL PUMP STATION

1 2 3 4 5

Pump Station #2: Self-Priming

A Known Long-Running-Time Issue

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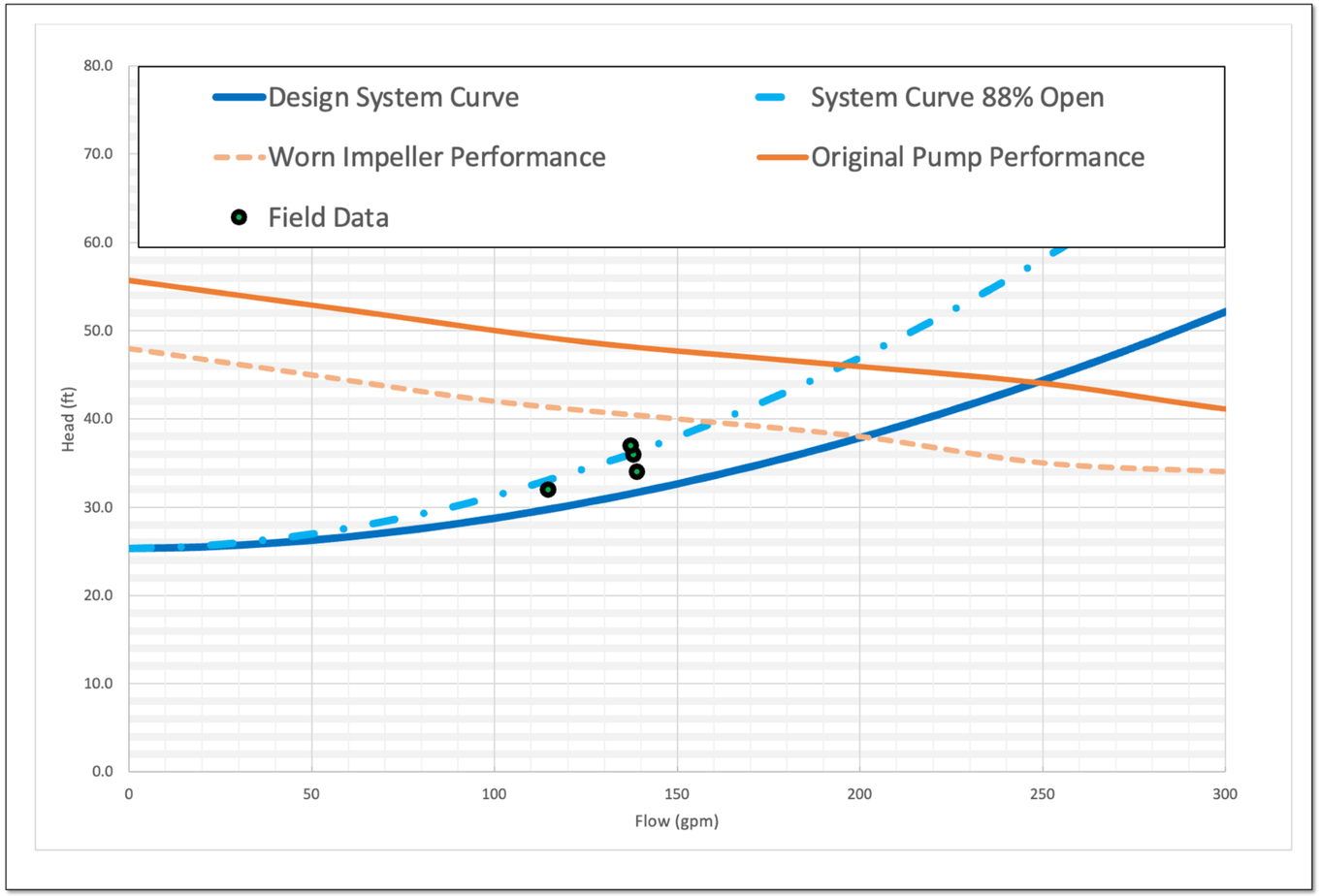
VIRTUAL PUMP STATION



Pump Station #2

- Force Main Clogged 12 percent
- Impeller Wear

OptimizerPS™
VIRTUAL PUMP STATION

1 2 3 4 5

Pump Station #3: Self-Priming

✓ No Issues Discovered

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VIRTUAL PUMP STATION

Pump Station #4: Submersible

✓ No Known Issues

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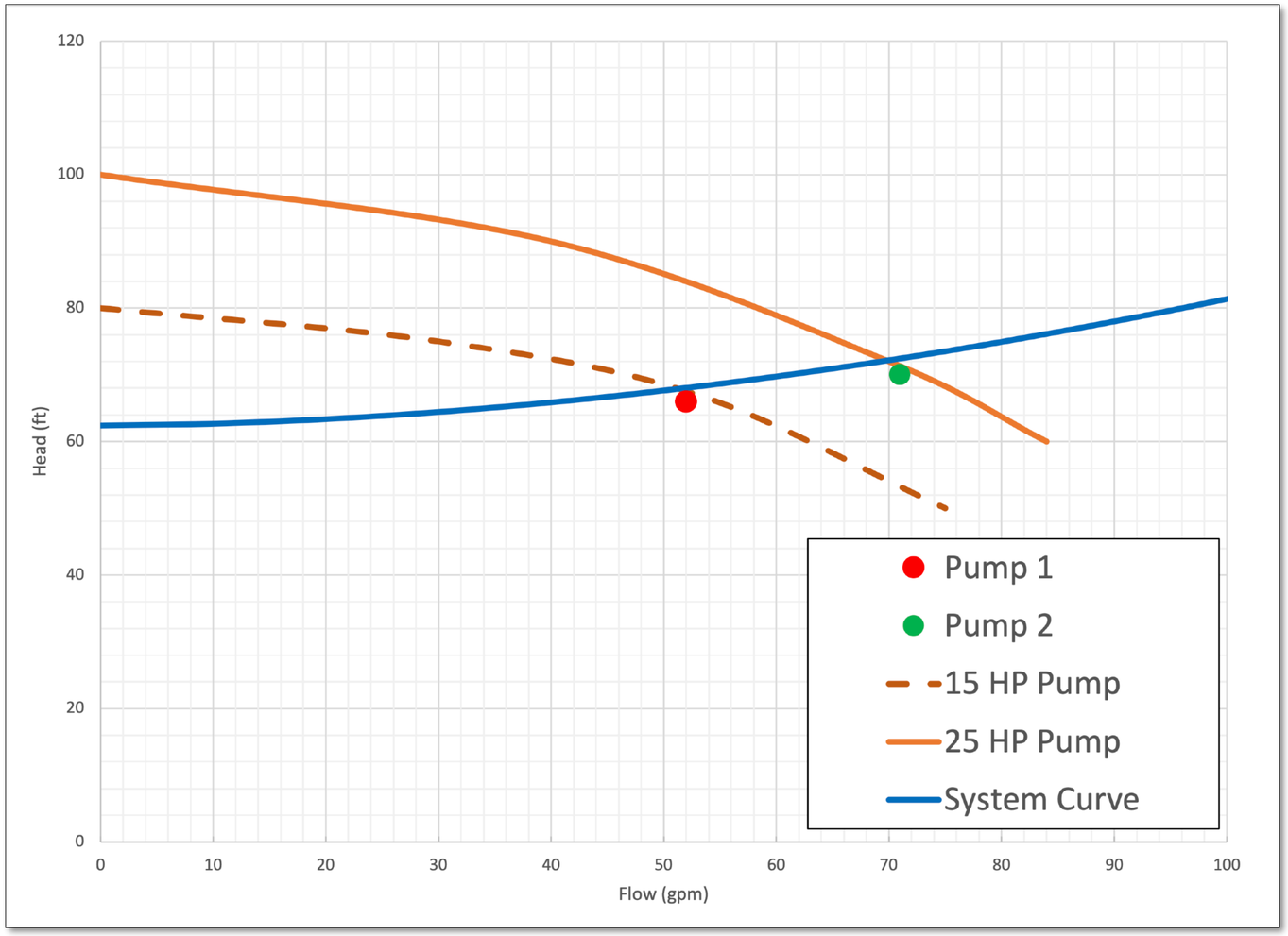
VIRTUAL PUMP STATION



Pump Station #4

- Different Pump Units

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VIRTUAL PUMP STATION

Pump Station #5: Flooded Suction

✓ Wet Weather SSOs

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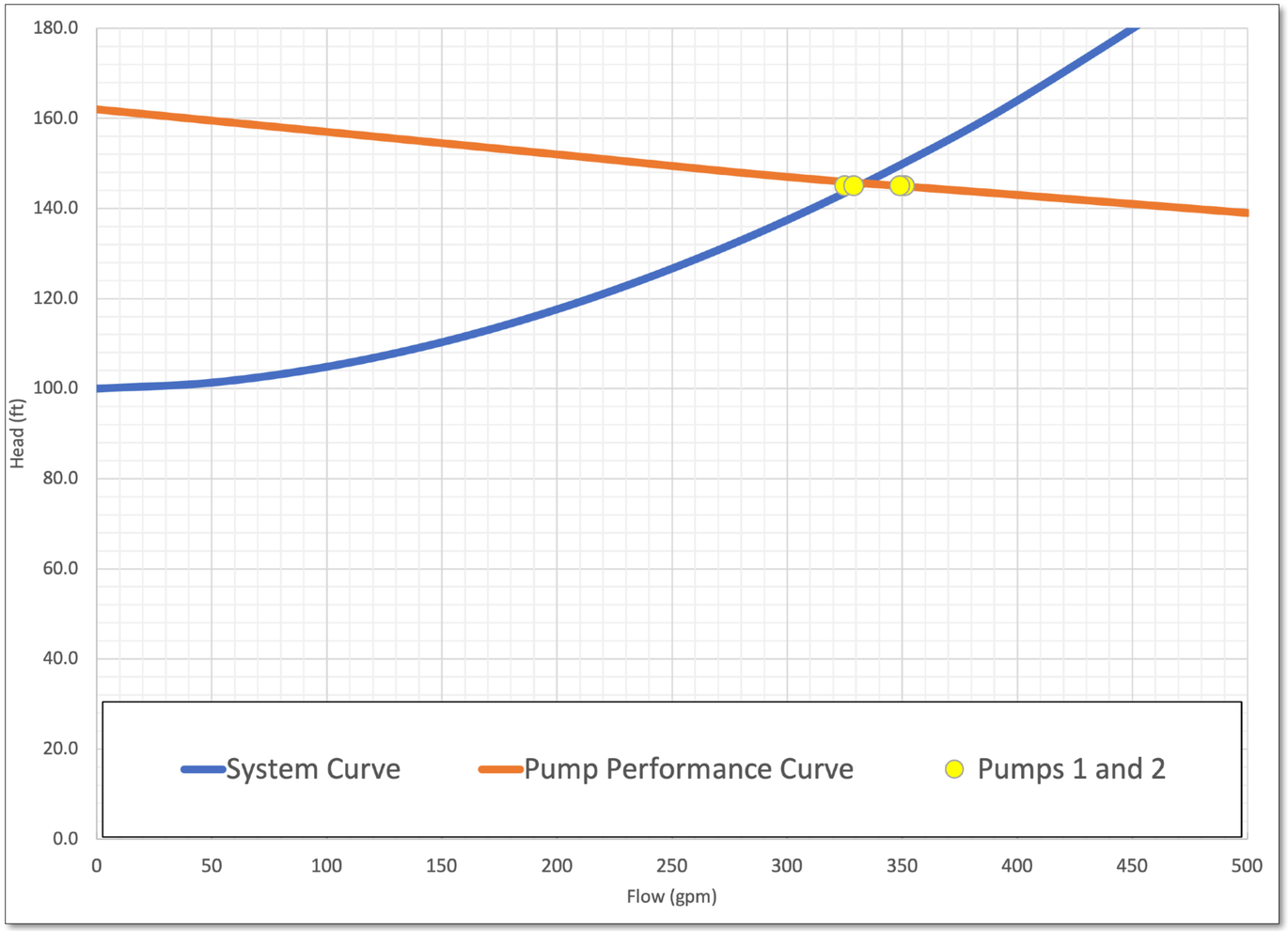
VIRTUAL PUMP STATION

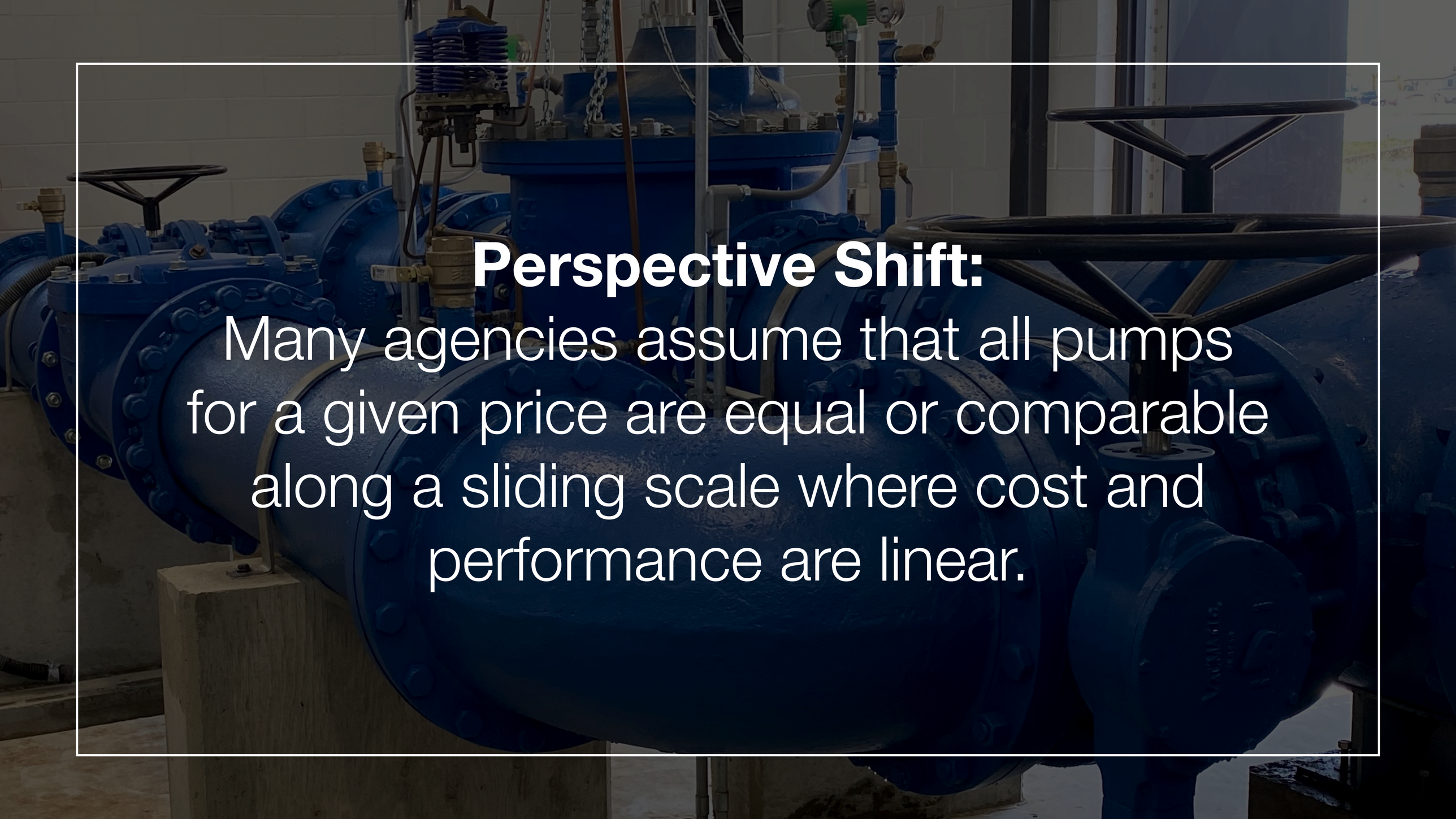


Pump Station #5

- Pump Capacity Confirmed
- SSES Recommended

OptimizerPS™
VIRTUAL PUMP STATION


Better capital
improvement planning
begins with data.
Apr.
May.
Jun.
Jul.



Perspective Shift:

Many agencies assume that all pumps for a given price are equal or comparable along a sliding scale where cost and performance are linear.

WHAT IF

OptimizerPS allows us to try out various real-time solutions—including those that are highly complex without software.

With the OptimizerPS virtual pump station, you can compare various options and pick a unit with the best performance and lifecycle cost.


welcome to the
Internet of Things (IoT)
OptimizerPS™
VIRTUAL PUMP STATION

Predictive Maintenance and Industry Comparisons

With more data about how pumps are performing, look for SCADA and monitoring to improve.

LIMA OHIO

Whitehouse 1864

WATERVILLE, OHIO on the banks of history

CITY OF WAPAKONETA, OHIO 1833

COUNTY OF SUMMIT

NORTHWESTERN THE DISTRICT WATER & SEWER

Mount Vernon

CITY OF VAN WERT OHIO
FULL CIRCLE LIVING WITH ROOM TO GROW
UTILITIES
AGRICULTURE
RELIGION
EDUCATION
MEDICAL
TRANSPORTATION
COMMERCE
FINANCIAL

Collaboration

Medina County Sanitary Engineers

Learn more about OptimizerPS™ and

DOWNLOAD THESE SLIDES

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