



Leveraging AMI

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Why Every Drop Matters

16%

Water Never Delivered

Treated water lost before reaching customers

\$3.4B

Annual Loss

Non-revenue water cost in North America



External Demands Up

Tighter regulations and customer expectations

Reliability, Resiliency, Vulnerability

Considerations for successful operations

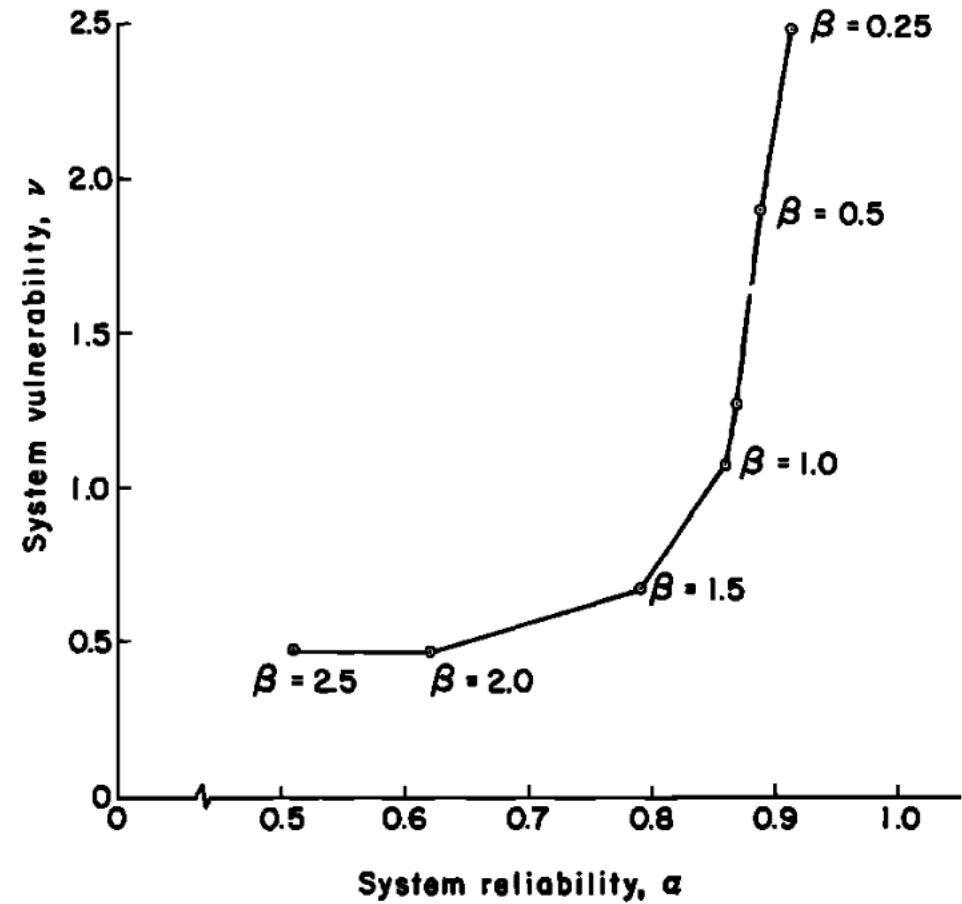


Fig. 9. Tradeoff between system reliability and vulnerability for β between 0.25 and 2.5.



Content vs. Capability

“Content informs. Capability transforms.”

Content = *Static representation of data* (dashboards, charts, screens).

Capability = *Ability to act on that data* (automation, workflows, alerts, integrations).

Hendersonville, North Carolina

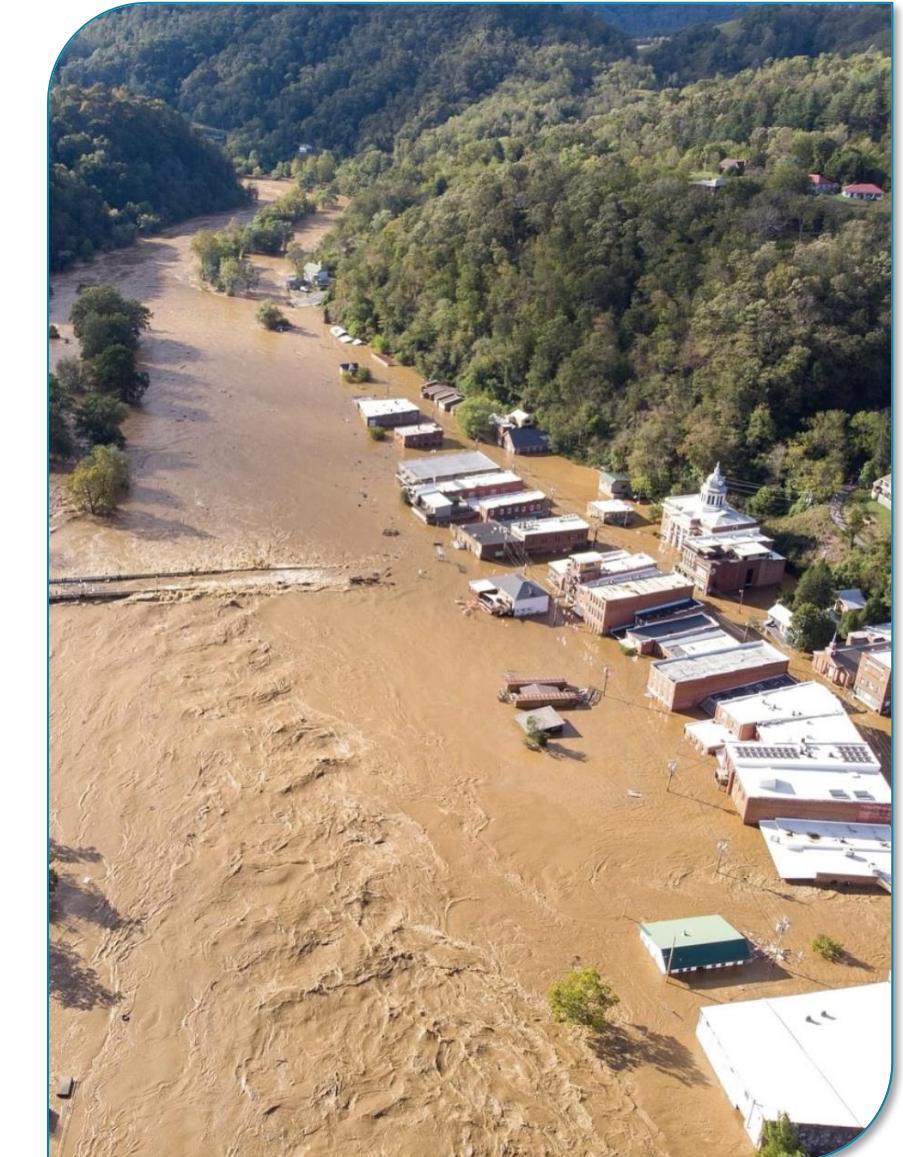
Resiliency + Reliability during Hurricane Helene

Hendersonville is a **small but tech-forward utility**, leveraging AMI, GIS, and predictive modeling to serve a growing population.

Municipal owned utility serving ~65,000 people

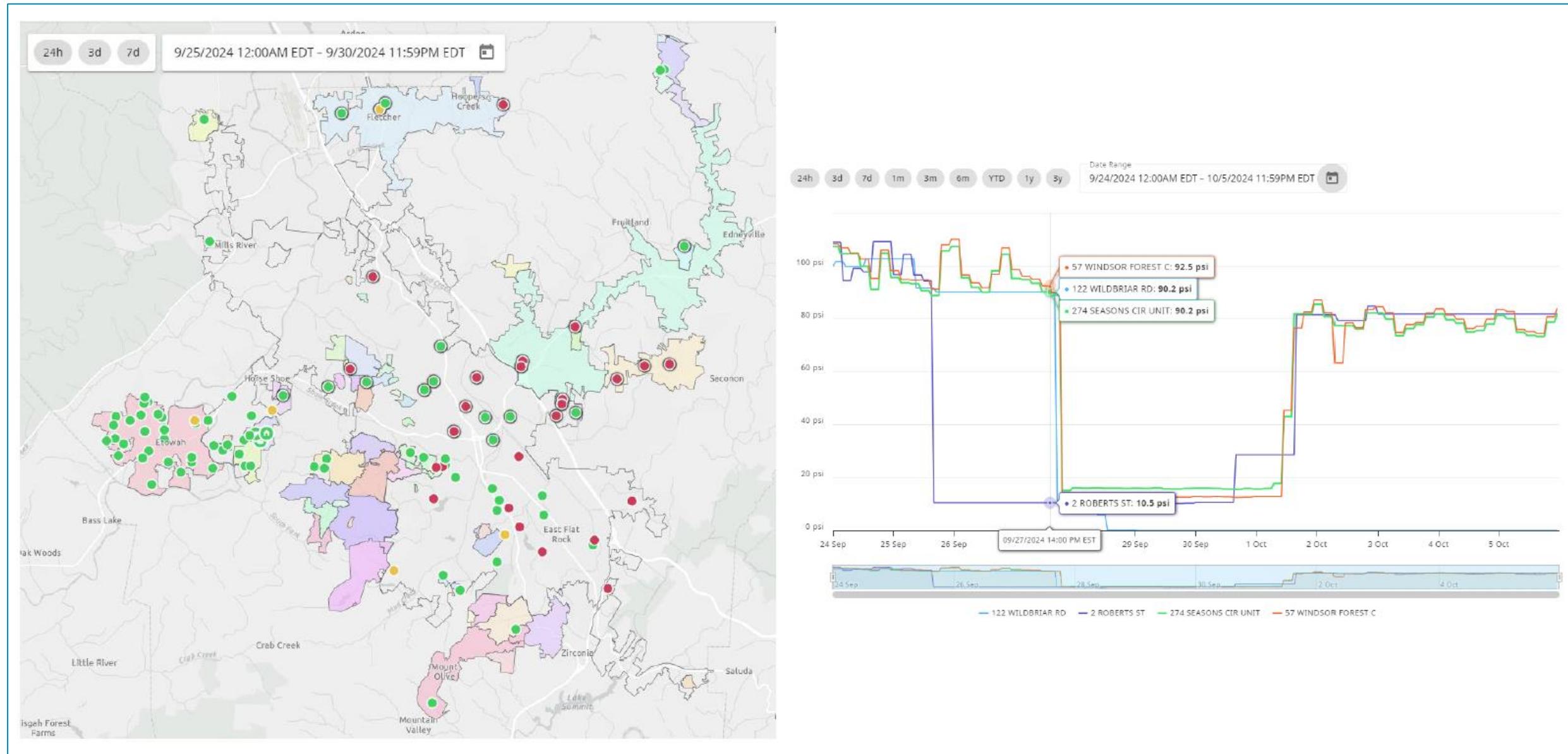
~700 miles of service lines and ~20M gallon storage

Hurricane Helene created an unprecedented challenge for the utility during recovery



Hendersonville, North Carolina

Resiliency + Reliability during Hurricane Helene



Jacksonville, Texas

Winter storm resiliency



Jacksonville leverages AMI and smart metering to move beyond “content” (dashboards) to actionable capability—remote shutoffs, pressure profiling, and proactive leak management.

Municipal owned utility serving ~20,000 people

Supplies water to four neighboring utilities

Utility prevented water loss during one in one-hundred-year winter event

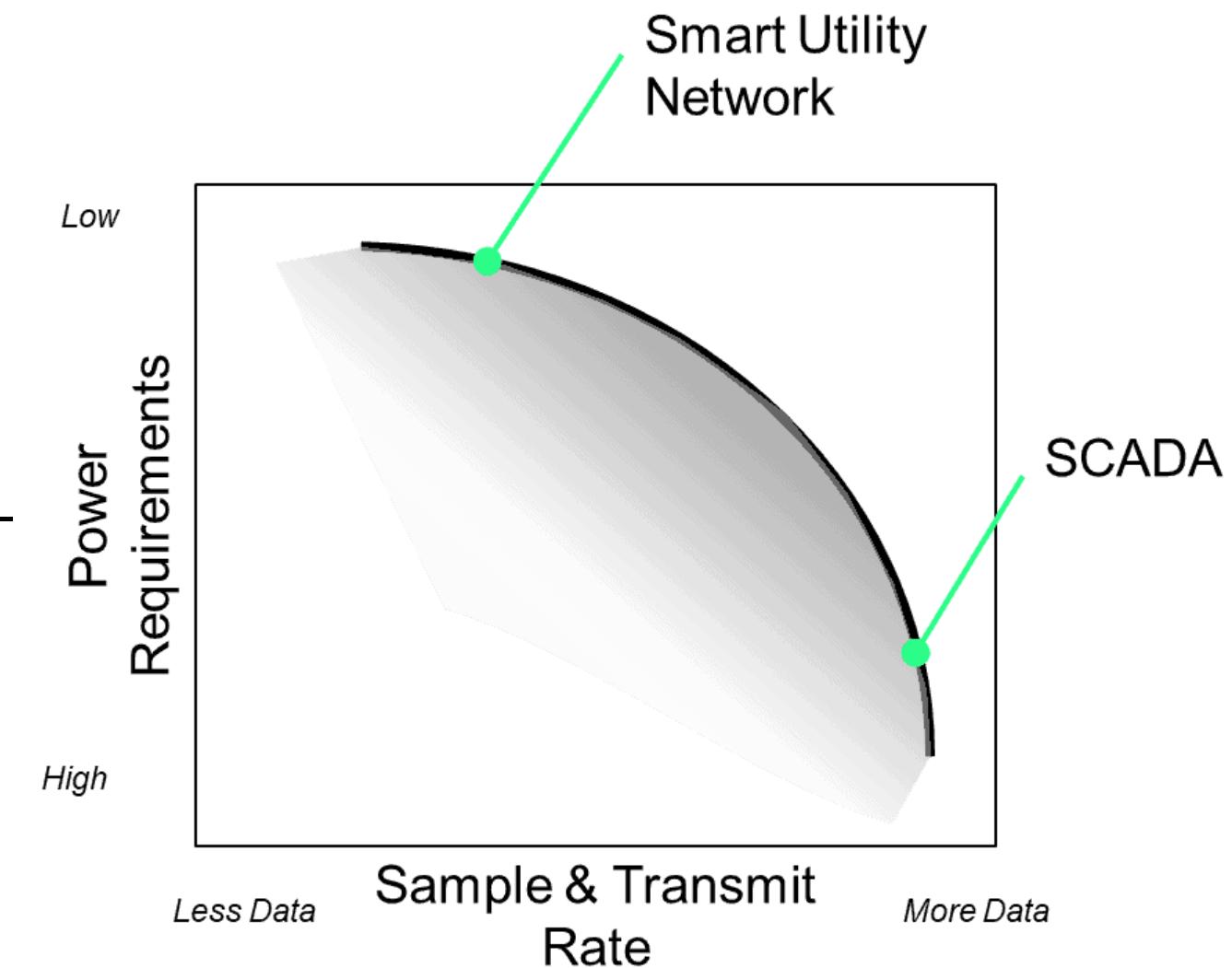
Walla Walla, Washington

Improving Reliability

Walla Walla, WA serves ~35,000 people and treats about ~25M gallons of water a day

AMI adds monitoring where SCADA is cost-prohibitive—pressure, temperature, valve positions, reservoir levels.

Provides a decoupled backup system to maintain continuity during SCADA failures or outages.



Park City, Utah

Reduce Vulnerability



Service population (including tourism): ~34,000. Surges to 50,000+ daily during peak events like Sundance Film Festival.

Many diverse water sources (Imported, deep wells, reservoirs, etc.)

Utility has many operational challenges due to demand spikes and elevation changes

Park City, Utah

Maximize reliability

Step 1: Extend AMI beyond billing



Step 2: Move AMI data into SCADA systems

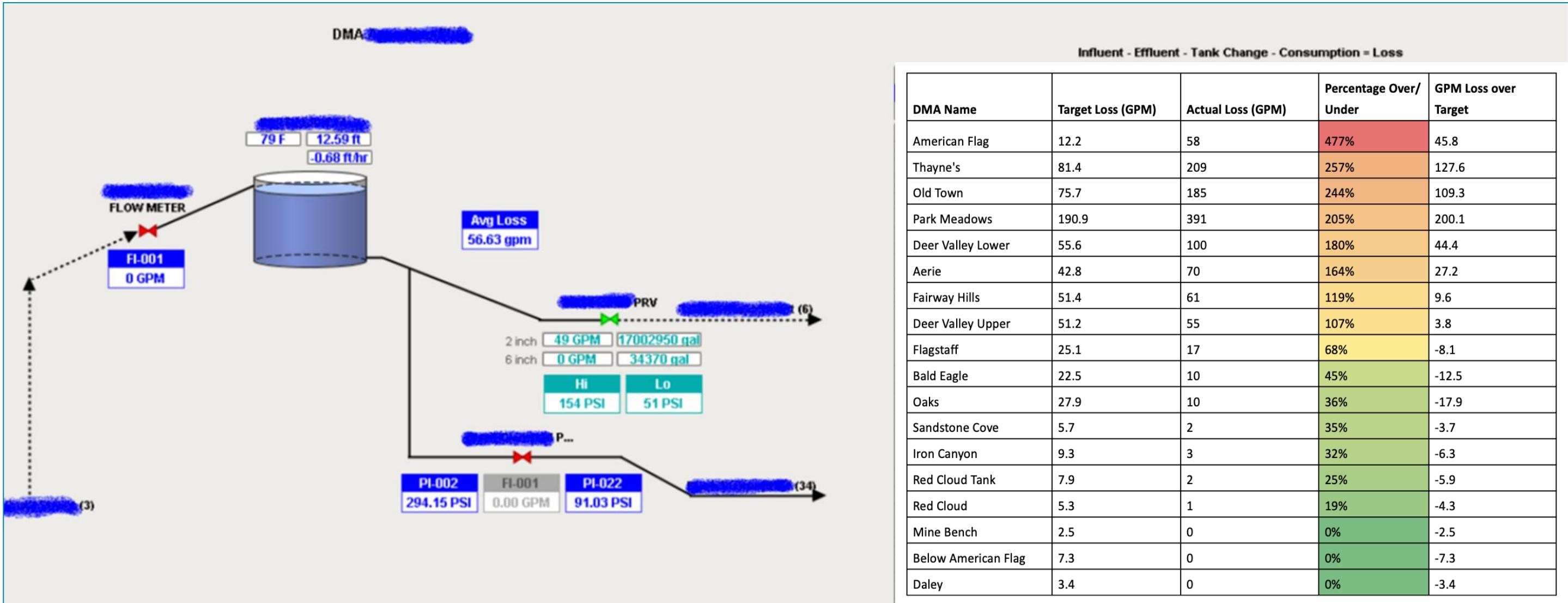
Step 3: Create daily loss by zone in SCADA

Step 4: **Capability**



Park City, Utah

Daily loss per zone into SCADA



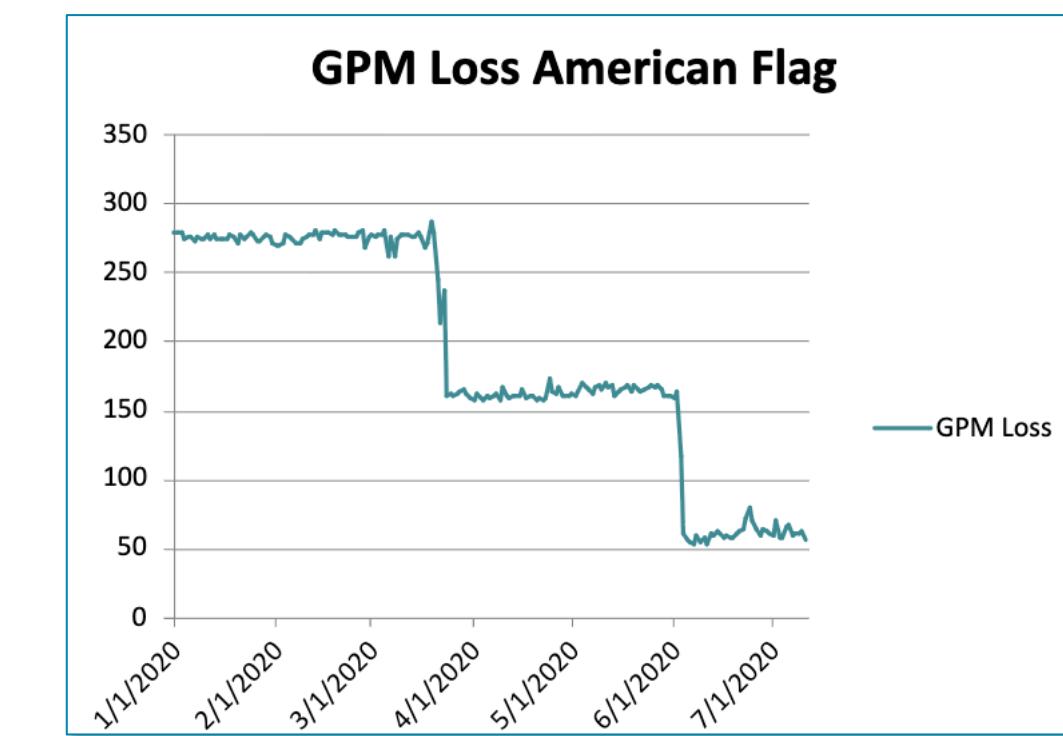
Park City, Utah

New Capabilities



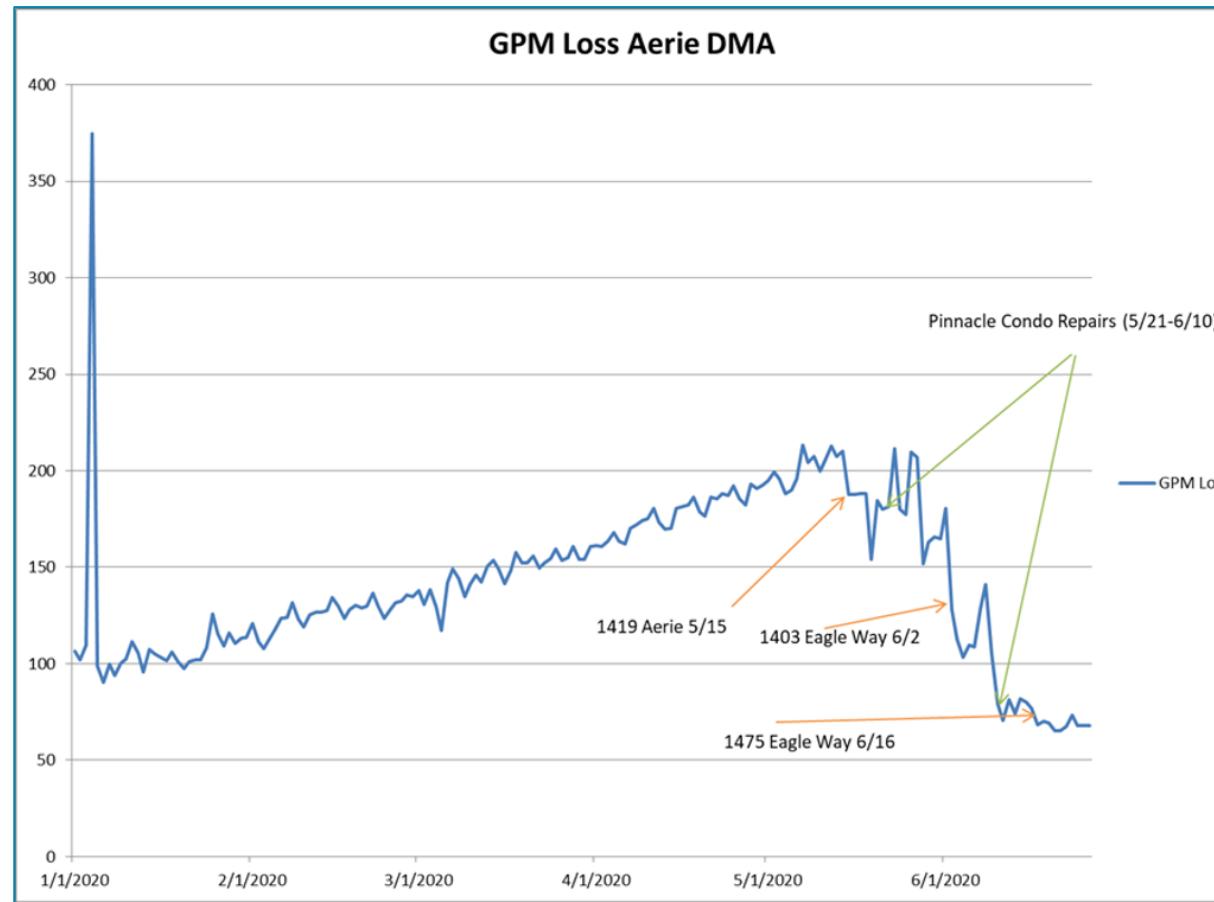
2 Improperly abandoned service lines found and abandoned.

215 GPM of recovered water is \$108,000 in annual savings (i.e. avoided production costs.) Project payback (replace 50 service lines) of 3.9 years.



Park City, Utah

New Capabilities – “Operational program, not a one-time exercise”



Park City Lessons Learned

1. Non-Revenue water is dynamic not static.
2. Data Silos are both people and software.
3. Leaks found ≠ Reduction in Annual Loss



What About AI?

AI is about Data Democratization

provide me a query that shows meters that are older than 10 years. Do not include any personally identifiable information in the query.

X



SQL Generator uses AI to create SQL queries.

AI is about Data Democratization



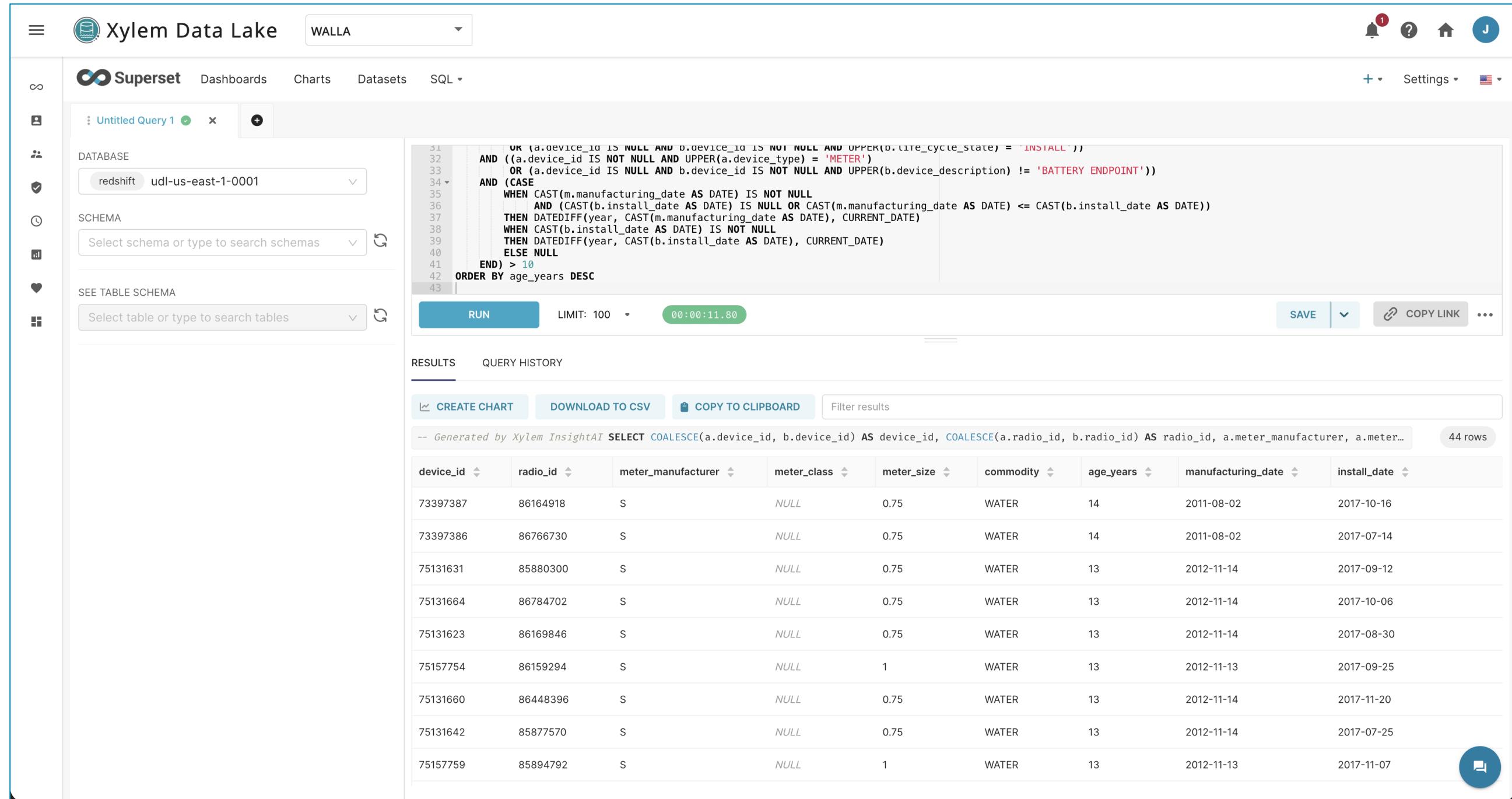
Here's the SQL query based on your request:

Customer: WALLA | Database: XDL Main

```
-- Generated by Xylem InsightAI

SELECT
    COALESCE(a.device_id, b.device_id) AS device_id,
    COALESCE(a.radio_id, b.radio_id) AS radio_id,
    a.meter_manufacturer,
    a.meter_class,
    a.meter_size,
    COALESCE(a.commodity, b.service_type) AS commodity,
    CASE
        WHEN CAST(m.manufacturing_date AS DATE) IS NOT NULL
            AND (CAST(b.install_date AS DATE) IS NULL OR CAST(m.manufacturing_date AS DATE) > CAST(b.install_date AS DATE))
        THEN DATEDIFF(year, CAST(m.manufacturing_date AS DATE), CURRENT_DATE)
        WHEN CAST(b.install_date AS DATE) IS NOT NULL
        THEN DATEDIFF(year, CAST(b.install_date AS DATE), CURRENT_DATE)
        ELSE NULL
    END AS age_years,
    CAST(m.manufacturing_date AS DATE) AS manufacturing_date,
    CAST(b.install_date AS DATE) AS install_date
FROM sensus_dm_walla.account a
FULL OUTER JOIN (
    SELECT *,
        CASE WHEN LEFT(device_id, 1) = 'B' THEN SUBSTRING(device_id, 2) ELSE device_id END AS device_id
    FROM sensus_dm_walla.metrology_device
)
```

AI is about Data Democratization



The screenshot shows the Xylem Data Lake Superset interface. The top navigation bar includes the Xylem logo, a search bar with 'WALLA', and various user and system icons. The left sidebar has a navigation menu with icons for Home, Databases, Dashboards, Charts, Datasets, and SQL. The main area is titled 'Untitled Query 1' and shows a SQL query being run against a 'redshift' database. The query filters for devices with specific IDs and types, calculates age in years, and orders the results. The results table displays 44 rows of data with columns: device_id, radio_id, meter_manufacturer, meter_class, meter_size, commodity, age_years, manufacturing_date, and install_date. The data shows various device configurations and their ages.

```
31 OR (a.device_id IS NULL AND b.device_id IS NOT NULL AND UPPER(b.lite_cycle_state) = 'INSTALL')
32 AND ((a.device_id IS NOT NULL AND UPPER(a.device_type) = 'METER')
33 OR (a.device_id IS NULL AND b.device_id IS NOT NULL AND UPPER(b.device_description) != 'BATTERY ENDPOINT'))
34 AND (CASE
35 WHEN CAST(m.manufacturing_date AS DATE) IS NOT NULL
36 AND (CAST(b.install_date AS DATE) IS NULL OR CAST(m.manufacturing_date AS DATE) <= CAST(b.install_date AS DATE))
37 THEN DATEDIFF(year, CAST(m.manufacturing_date AS DATE), CURRENT_DATE)
38 WHEN CAST(b.install_date AS DATE) IS NOT NULL
39 THEN DATEDIFF(year, CAST(b.install_date AS DATE), CURRENT_DATE)
40 ELSE NULL
41 END) > 10
42 ORDER BY age_years DESC
43
```

device_id	radio_id	meter_manufacturer	meter_class	meter_size	commodity	age_years	manufacturing_date	install_date
73397387	86164918	S	NULL	0.75	WATER	14	2011-08-02	2017-10-16
73397386	86766730	S	NULL	0.75	WATER	14	2011-08-02	2017-07-14
75131631	85880300	S	NULL	0.75	WATER	13	2012-11-14	2017-09-12
75131664	86784702	S	NULL	0.75	WATER	13	2012-11-14	2017-10-06
75131623	86169846	S	NULL	0.75	WATER	13	2012-11-14	2017-08-30
75157754	86159294	S	NULL	1	WATER	13	2012-11-13	2017-09-25
75131660	86448396	S	NULL	0.75	WATER	13	2012-11-14	2017-11-20
75131642	85877570	S	NULL	0.75	WATER	13	2012-11-14	2017-07-25
75157759	85894792	S	NULL	1	WATER	13	2012-11-13	2017-11-07

AI is for data democratization

Capability: Reduce vulnerability by lowering the data analysis bar for utility employees

Conclusion

AMI is all about data collection

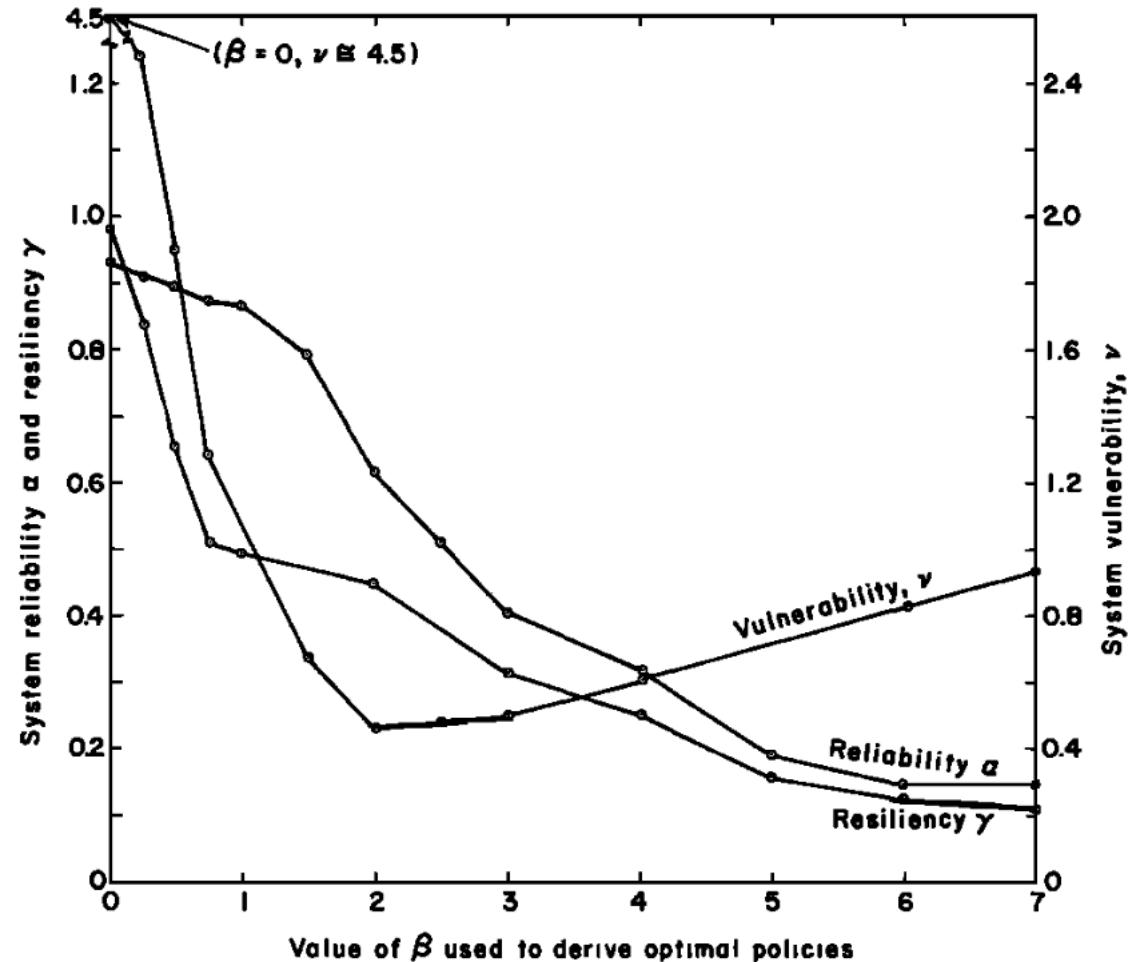


Fig. 8. System reliability, resiliency, and vulnerability as a function of parameter β used to derive operating policies.

What's next?

New AI use cases

Further application of data towards operations

Further proliferation of data (securely)