Silicon Valley Clean Water
1400 Radio Road, Redwood City, California

I. Respondent:

Anir Bhagwat – Senior Engineer

II. Presenters:

Anir Bhagwat – Senior Engineer
Arvind Akela – Engineering Director

III. Treatment Plant Characteristics:

- Wastewater/Recycled Water
- 85 employees
- 220,000 customers served

IV. Innovation: Energy Storage System for Power Demand Management

A. Description

SVCW is at the forefront of implementing innovative engineering solutions to better serve our ratepayers, and we are especially proud of our Energy Storage System for Power Demand Management. Through a $1 million SGIP grant from the State of California, SVCW has installed new 1 MW/MWh Tesla® Li-ion batteries to manage its peak power demand at the plant.

One of the biggest operating expenses at SVCW is the energy cost, and demand charges constitute a large portion of it. PG&E imposes a large penalty for spikes in the electrical demand, especially during peak rate periods. Having an energy management system that charges batteries during low-cost, off-peak period and discharges to minimize the peak demand and reduce the power cost in terms of electrical supply (PG&E) demand charges will reduce SVCW's utility bill.

Using smart algorithms and machine learning, the energy storage system gets more efficient in understanding trends in plant electrical usage to further optimize energy storage and use. This system is scheduled to be placed into operation in October 2020 and is expected to save up to $150,000 in utility demand charges per year.

B. Type of Innovations

- Increased Use of Information Technology
- Inter-agency agreements or other administrative changes
- Optimization of existing resources

C. Motivation for Innovations

SVCW was driven by the motivation to:

1. reduce one of its largest operational expenses and
2. enhance reliability of its power supply.

D. Barriers/Challenges

We were selecting technology from a startup firm without a long track record in the business, so there was a concern with the viability of the technology. Furthermore, any generation source is required to get interconnection approval from power utility (PG&E) and navigating through that process presented its challenges.

E. Benefits

SVCW has enhanced the reliability of its power supply, and the system is anticipated to save up to $150,000 in utility demand charges per year.

F. Effect on Staff Training

We contracted with an external vendor to maintain the battery system, but also training our staff to understand the system. The operation is hands-free so impact on operation is minimal.

G. Lessons Learned:

Selecting a startup firm that does not have long track record in the business can potentially bring instability into operation, so one needs to plan risk mitigations for that.

Any generation source is required to get interconnection approval from the power utility. This process can be very challenging and could significantly impact the implementation

plan, and we had to continuously communicate and coordinate with PG&E to make this successful.

Implementing a new technology at SVCW is always prefaced by going through thorough engineering vetting and evaluation of the business case to ensure that we are making the best decisions to serve our ratepayers. This process helped in demonstrating the value of this project to Senior Management and Operations and obtain their support for the project.