



Seattle
Office of Sustainability
& Environment

**INTEGRATED
DESIGN LAB** **W**
UNIVERSITY of WASHINGTON //

CASE STUDY **VERITY CREDIT UNION BUILDING RENEWAL**

“Participating in the City of Seattle’s Building Tune-Up Accelerator program and choosing the Building Renewal Path allowed us to create a great 5-year plan for energy improvements alongside our other capital improvements. Having more time for planning helps us optimize for long-range savings—which is best for the company, the building, and the community.”

STEPHEN CHANDLER, VERITY CREDIT UNION FACILITIES MANAGER

The 38,000 square foot Verity Credit Union building located in Northwest Seattle was designed in 1997 by the Miller Hull Partnership. At the time of its construction, it was a model of sustainable design with large banks of windows to maximize daylighting, deep overhangs to shade the building from the summer sun, and many other innovative design features and technologies. Fast forward twenty-plus years, and while the building is still a great example of sustainable design for its time, building managers knew that its energy efficiency could be greatly improved. Additionally, building managers wanted to improve the building’s ENERGY STAR score and address occupant complaints by ensuring more comfortable temperatures year-round and installing better lighting. Sustainability is also part of Verity’s mission as a member of the Global Alliance for Banking on Values.

Ready to get started, the Verity team enrolled in the City of Seattle Tune-Up Accelerator program’s Building Renewal path. This option connected facility managers with building energy experts from the University of Washington Integrated Design Lab (IDL) to help them develop a deep retrofit plan to maximize the building’s energy efficiency and savings over the long term. For Verity, this also meant learning from IDL what it would take for the building to become carbon neutral—meaning a highly energy-efficient building that doesn’t produce climate-impacting greenhouse gas (GHG) emissions and whose energy needs could be met by on-site renewable solar energy.



Stephen Chandler,
Verity Credit Union Facilities Manager

WHAT IS A BUILDING RENEWAL?

A Building Renewal is a real estate enhancement strategy for “deep energy retrofits” to modernize a building, make it competitive with new construction, and increase its market appeal by focusing on comprehensive energy efficiency upgrades. The strategy can deliver energy savings of over 35% from current energy use. Building Renewal teams use an integrated design approach that emphasizes connections throughout the building to identify opportunities for operational savings and major equipment replacement at end-of-service life, while leveraging utility incentives. This process delivers better building performance and more energy savings than siloed approaches that typically focus on just one equipment upgrade at a time.

BUILDING RENEWAL PLAN ESTIMATED SAVINGS PROJECTIONS

	ENERGY SAVINGS (KBTU/YR)	ELECTRIC	GAS	UTILITY COSTS ¹	EMISSIONS SAVINGS (MT CO ₂ e/YR) ²
STEP 1	624,750	31%	1%	\$16,230	1 (1%)
STEP 2	1,252,330	38%	35%	\$22,530	38 (43%)
STEP 3	1,827,980	19%	100%	\$18,450	88 (100%)

1- Based on 2018 utility rates.

2- Direct (gas) GHG emissions only since Seattle City Light electricity has [zero net GHG emissions](#).



Photo by PSR Mechanical

IDL conducted a walk-through of the building and provided recommendations for deep energy-savings and a simulation-based analysis to create the long-term plan. IDL also worked with PSR Mechanical to craft an implementation pathway for the Verity team to achieve its goals over 10 years while building on the energy-efficiency upgrades and equipment replacements for which Verity had already planned.

VERITY'S BUILDING RENEWAL PLAN

The IDL team crafted a plan with Verity and PSR Mechanical to improve the facility's 2017 ENERGY STAR score of 68 to 90 (better than 90% of similar buildings), reduce its site Energy Use Intensity (EUI) from 91 to 42 kBtu/sf/yr and ultimately make it a carbon-neutral building. The fully implemented plan is estimated to provide overall energy savings of up to 54% and utility cost savings of up to \$18,450 annually.

Step 1:

- Continue ongoing improvements to the building's HVAC systems and building automation controls
- Upgrade the lighting system and add controls and dimmers
- Add controls for occupants to manage plug loads

MEET THE TUNE-UP SPECIALIST TEAM

Stephen Chandler, Facilities Manager, Verity Credit Union, Seattle, WA

Neil Bavins, Consultant, PSR Mechanical, Seattle, WA

Christopher Meek, Director, University of Washington Integrated Design Lab, Seattle, WA

This project was supported by the Seattle Building Tune-Up Accelerator Program through the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) under the Buildings Technologies Office Award Number DE-EE0007556. UW IDL provided technical support to building owners seeking to plan for deep retrofits beyond the tune-up.

Step 2:

- Upgrade to more efficient condensing boilers and rebuild the air-cooled chiller
- Conduct a variable air volume (VAV) retrofit
- Add ceiling fans on the third floor

Step 3:

- Replace gas water boilers with electric heat pump boilers for space and water heating
- This step brings the building's energy use down enough so that its remaining needs could be met by an on-site solar array

IMPLEMENTATION TO DATE

In 2019, Verity Credit Union continued updates to its building automation and installed new high-efficiency condensing boilers as an interim step, since the existing units were at end-of-life. The new boilers are projected to reduce annual gas use by about 13,800 therms and the incremental cost (\$12,000) of installing the more efficient equipment will pay back in 10 years with annual cost savings of about \$1,200. Electric heat pumps will be considered again during step 3. In 2020, Verity will continue its path to a more efficient facility by upgrading the air-cooled chiller and lighting system.