

## CASE STUDY – BREATHING NEW LIFE INTO FIRST SECURITY BANK



### The Building

**First Security Bank, Missoula, Montana**

**Size:** Six floors, 23,000 square feet

**Built:** 1955; Carol Word purchased in 2003

**Tenants:** First Security Bank, Boy Scouts of America, Dell Computers, a server farm, various professional services businesses

**Utility:** Northwestern Energy

### The Integrated Measure Package

The Integrated Measure Package (IMP) for the First Security Bank building was a comprehensive set of strategies that included:

- Maintenance and operation upgrades
- Envelope sealing air infiltration improvements
- HVAC direct digital control system
- Lighting upgrades and controls
- Variable Refrigerant Flow heat pump HVAC system

Summer temperatures in Montana can reach the 80s, and in downtown Missoula, the First Security Bank building's air conditioning system was near failure. The 1950s-era building had become increasingly outdated and uncomfortable for current tenants and unattractive to prospective ones, who could choose from more modern office space nearby.

As winter 2012 moved quickly into spring, building owner Carol Word and property manager Scott Cooney sought bids for a new HVAC system from three engineering firms, growing frustrated as the firms responded with solutions at wildly different price points.

Then a fourth option emerged from the Northwest Energy Efficiency Alliance (NEEA) and its commercial sector initiative, BetterBricks.

### BUILDING RENEWAL

The goal of BetterBricks is to accelerate the adoption of energy-efficient best practices among real-world building professionals. A central BetterBricks program is a real estate strategy called Building Renewal that helps owners, managers and tenants conduct whole-building, deep energy-efficiency retrofits of existing properties.

In Missoula, bidding firms looked at the First Security building and focused on the aging HVAC system. BetterBricks, in contrast, saw an opportunity to provide Word with a customized, integrated plan for improving her entire building's energy performance, revitalizing its market position and competitiveness, and increasing its asset value.

The holistic approach resonated with Word. Building Renewal offered the opportunity to rejuvenate and extend the functional and economic life of her building, repositioning it to compete more successfully for high-quality tenants looking for modern, comfortable office space.

The other firms “were just looking at what would fit the bill,” Word recalled, “whereas I got the impression—and this is what happened—that NEEA was looking at our building specifically and what would fit the needs of our building.”

In October 2012, they got to work.

## STAGE ONE: TECHNICAL AND FINANCIAL ANALYSIS

A team comprised of NEEA staff; Word and Cooney; contractors and consultants; and a NorthWestern Energy representative were assembled for the project. They began by engaging the Integrated Design Labs (IDL) at the University of Idaho and the University of Washington to run a pressure test on the building. They sealed doors and windows, then checked for leaks.

Word already knew that her air conditioner was about to fail. In addition to the need for a new and more advanced HVAC system, the technical analysis revealed deeper issues, such as leaks in the building envelope; broken dampers in need of repair; and inefficient lighting.

## THE VALUE OF A COMPREHENSIVE APPROACH

Next, two holistic building-wide improvement plans, called Integrated Measure Packages or IMPs, were developed. In contrast to a traditional, single-system retrofit, an IMP offers a comprehensive and financially viable plan to address the building’s immediate problems, while at the same time creating a strategic path for enhancing the building’s value.

This big-picture approach addresses the building and its various systems as a whole, revealing connections that can result in more opportunities for improvements and savings. In developing each IMP, contractors and consultants performed energy modeling that estimated what Word would save in both energy and energy costs by adopting the measures in each plan. Then, the team’s cost estimator provided estimates of how much Word would spend on capital costs to make the improvements.

## COMPETITIVE ADVANTAGE AND OTHER NON-ENERGY BENEFITS

For owners like Word who want to increase the long-term value of their properties and become more competitive in their markets, non-energy benefits that would result from the improvements are integral to the business case. A financial analysis determined the potential value of non-energy benefits at a floor-by-floor and lease-by-lease level and outlined the risks. Key benefits include:

- Better aesthetics, greater tenant comfort, increased indoor air quality
- Improved capacity to keep current tenants and attract new, high-quality ones
- Improved ENERGY STAR® and LEED ratings, which attract higher-credit-quality government and corporate tenants that require such certifications for their office space
- Lower long-term average vacancy rate
- Reduced maintenance calls, and less time and money spent responding to them



Carol Word, First Security Building Owner

New rooftop inverters replace the existing bank of air-cooled condensers.



“I was surprised by the opportunities that presented themselves to help not only save energy, but also to improve tenant comfort—above and beyond just updating our old heating and cooling system.”

– Carol Word



Tenant space with new lighting and ceiling panels installed.

### STAGE THREE: IMPLEMENTATION

Energy and cost savings from sealing the envelope, installing cleaner AC filters to improve air flow and other low- and no-cost improvements kicked in almost immediately. Additionally, by sealing the building first, Word was able to purchase smaller, less-expensive HVAC units than an unsealed building would have required.

In the second phase of implementation, Word adopted her IMP's lighting recommendations. These called for more energy-efficient lighting; fixtures that take better advantage of new technologies; and an overall lighting design that incorporates the building's ample natural light and matches the needs of the modern workplace. Specifically, with the introduction of higher-quality light fixtures, the old design of 73 to 76 fixtures per floor was reduced to 27 per floor.

Finally, there was the ailing air conditioning, which Word replaced with the IMP's recommended Variable Refrigerant Flow system—a more efficient, whole-building system capable

of providing tailored heating and cooling to match each tenant's preference.

The result is a better-looking building with more comfortable tenants. The use of fewer, higher-quality light fixtures has created a modern, updated look in the lobby and on the floors. Tenants no longer complain to Word and Cooney about extreme heat and cold.

### STAGE FOUR: MEASUREMENT AND VERIFICATION

In the next stage, Measurement and Verification, the full impact of the improvements to Word's building will be quantified and confirmed. But the

### STAGE TWO: BUILDING OWNER APPROVAL

After Word was presented with the two different IMPs, she chose the plan that would allow contractors to repurpose some of the building's old ductwork and to abandon some equipment in place, avoiding the cost and disruption of removal. A recommendation to seal the building envelope surprised Word, because none of the engineering firms she'd consulted earlier had mentioned it.

"That came out of left field for me," she said. "We were amazed by the energy savings just by doing that."

#### The Numbers\*

**ESTIMATED PROJECT COST:**  
\$550,000

**ESTIMATED ENERGY COST SAVINGS:**  
46%  
or more than \$20,000/per year

**OTHER ESTIMATED SAVINGS:**  
More than \$14,000 per/year in operations and maintenance

**ESTIMATED CARBON REDUCTION:**  
84 metric tons per year, equivalent to keeping 17 cars off the road for a year

**ESTIMATED RETURN:**  
15%

*\* All estimated costs and savings are the result of NEEA's analysis.*



New T-5 linear florescent fixtures.

projections are encouraging.

By adopting most of the IMP's recommendations, Word is expected to save an estimated 46 percent annually in energy costs. The building is expected to use an estimated 74 percent less energy, driving its potential EnergyStar score up to 93 out of a possible 100. Plus, the building is expected to produce an estimated 84 fewer metric tons of carbon per year, equivalent to keeping 17 cars off the road annually.

### **LESSONS LEARNED: QUALIFIED CONTRACTORS ARE KEY**

Even as they were starting to benefit from initial upgrades, Word and Cooney dealt with unexpected challenges that would eventually stretch the project's 2-to-3 month timeline to 15 months. The delays were driven by local contractors who did not have previous experience with a system of this magnitude.

Looking back, Word said she could've avoided the delays by ensuring that all contractors were familiar with the systems they would be installing and by following the IMP's recommendation to hire a third-party "commissioner" to oversee their work.

### **A BUILDING'S BRIGHTER FUTURE**

Word is excited about the estimated energy and cost savings that are expected to flow from embracing Building Renewal for her building. She's already enjoying significant non-energy benefits. Her tenants are happier, she's been able to recruit new tenants more easily and charge them higher rates, and she can see a brighter, more competitive future for her property.

**"Had I known then what I know now, I would have gone outside the area for a contractor that was very familiar with the system itself."**

**– Carol Word**

## **BUILDING RENEWAL: GET STARTED WITH SPARK**

Using the lessons learned from applying the Building Renewal strategy in Missoula, NEEA has developed SPARK, an online tool that allows building managers and owners to customize their own holistic, building-wide improvement plans. To find out how Building Renewal can save energy and money and increase the value of your properties, go to [www.betterbricks.com/buildingrenewal](http://www.betterbricks.com/buildingrenewal).



### **About BetterBrick's Building Renewal program**

Building Renewal is a real estate strategy to modernize a building and improve its competitive position by focusing on comprehensive energy efficiency upgrades. When integrated thoughtfully, Building Renewal energy efficiency tactics can deliver energy savings of 35% or more from current energy use. Given current building practices, technologies, design and construction practices, surpassing 35% requires a more cohesive and holistic approach, and can make a much greater impact on the market perception of the property.

**BetterBricks. Powerful Energy Ideas. Delivered by NEEA.**  
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