

# CALVIN

## **Calvin Energy Recovery Fund Quarterly Report**

**October –  
December 2018**

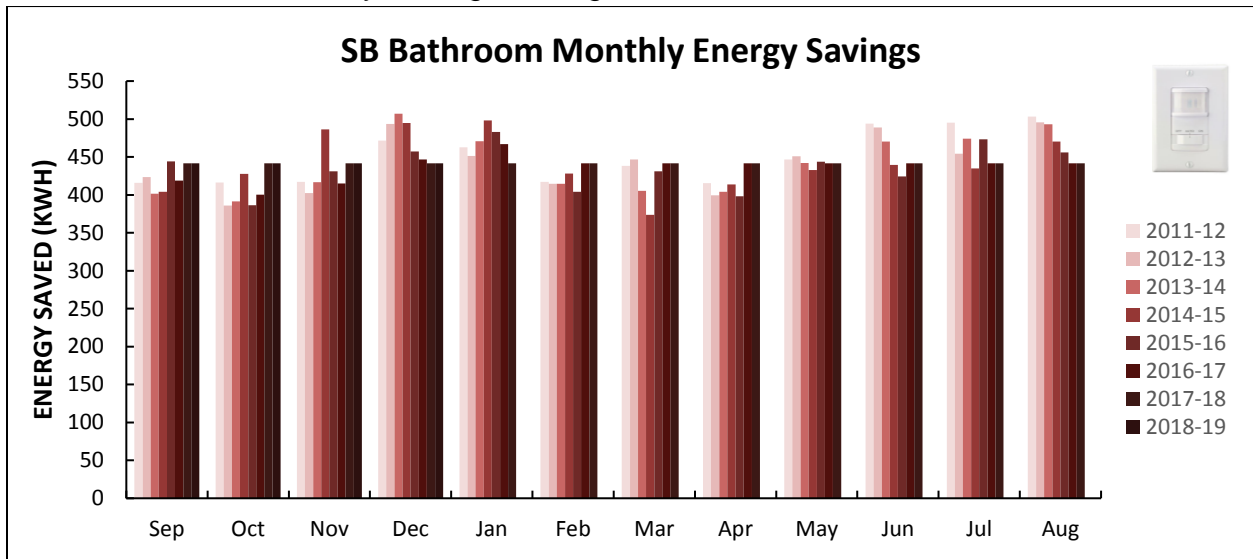
**Prepared by:  
Michael Hansen  
Adam Marquardt**

**January 2019**



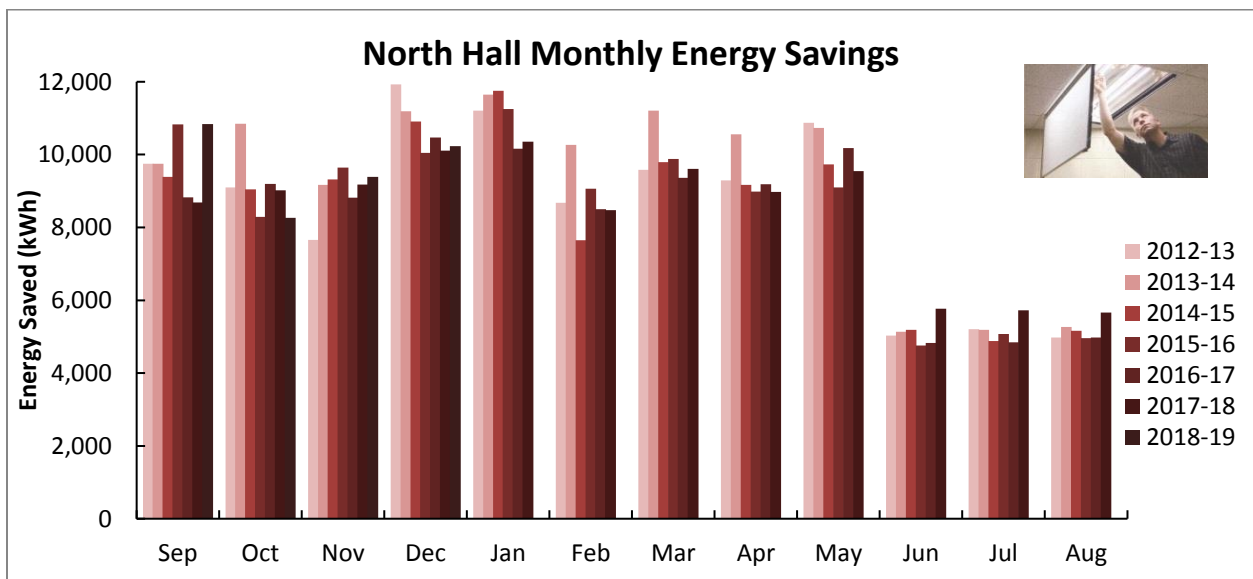
## Science Building Bathroom Motion Sensor Project

The Science Building bathroom motion sensor project has been accumulating energy and financial savings since July 2011. This past quarter, 1,325 kWh of energy and \$85.56 were saved. The project reached its breakeven point in June 2014 and is expected to continue to contribute savings to CERF until June 2019. Detailed monitoring has been discontinued, and monthly average savings are recorded.



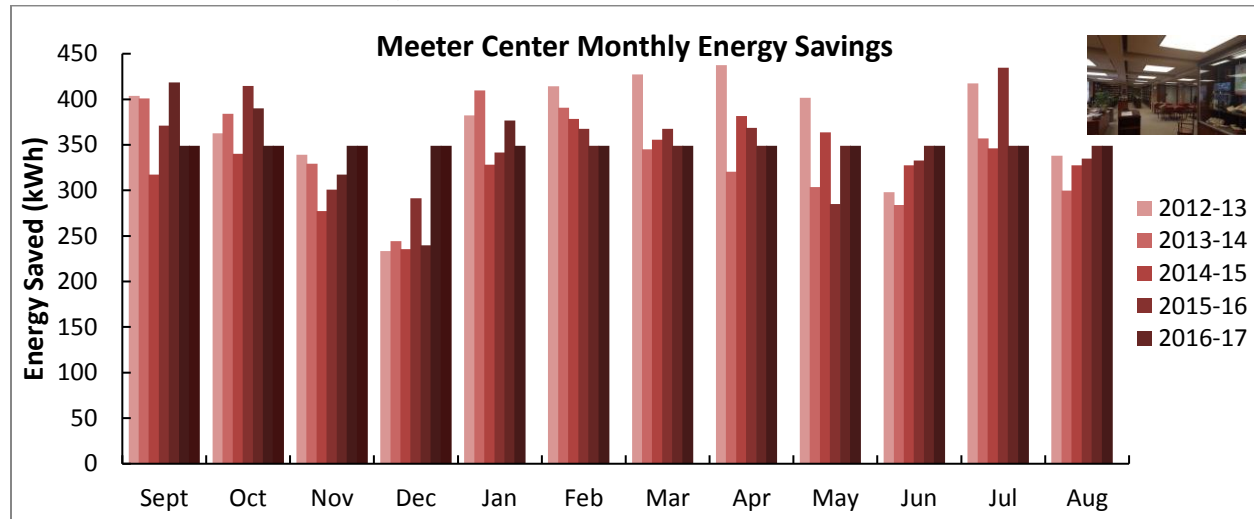
## North Hall Lighting Project

The North Hall lighting project continues to accumulate significant energy savings for Calvin. This past quarter, the North Hall lighting project saved 26,986 kWh and \$2,237.67. The project reached payback in December of 2016 and will add funds for an additional five years through Fall 2021.



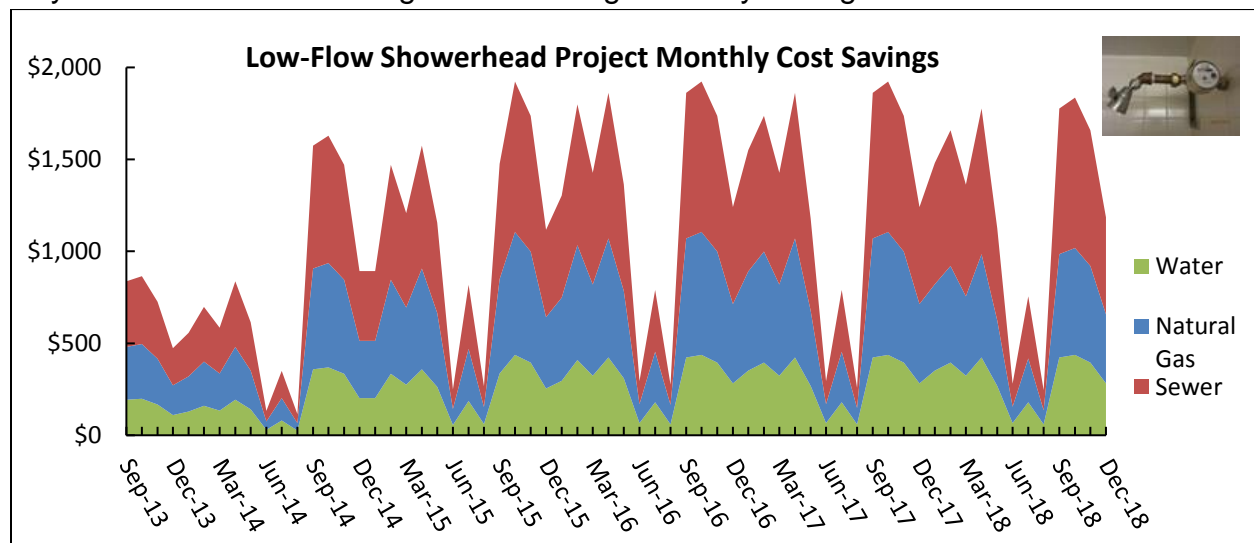
## Meeter Center Lighting Project

The Hekman Library's Meeter Center project continues to produce consistent savings. Last quarter, 1,047 kWh and \$34.23 were saved. Like the Science Building Bathroom project, detailed monitoring for the Meeter Center has stopped. We now estimate savings by historical monthly averages.



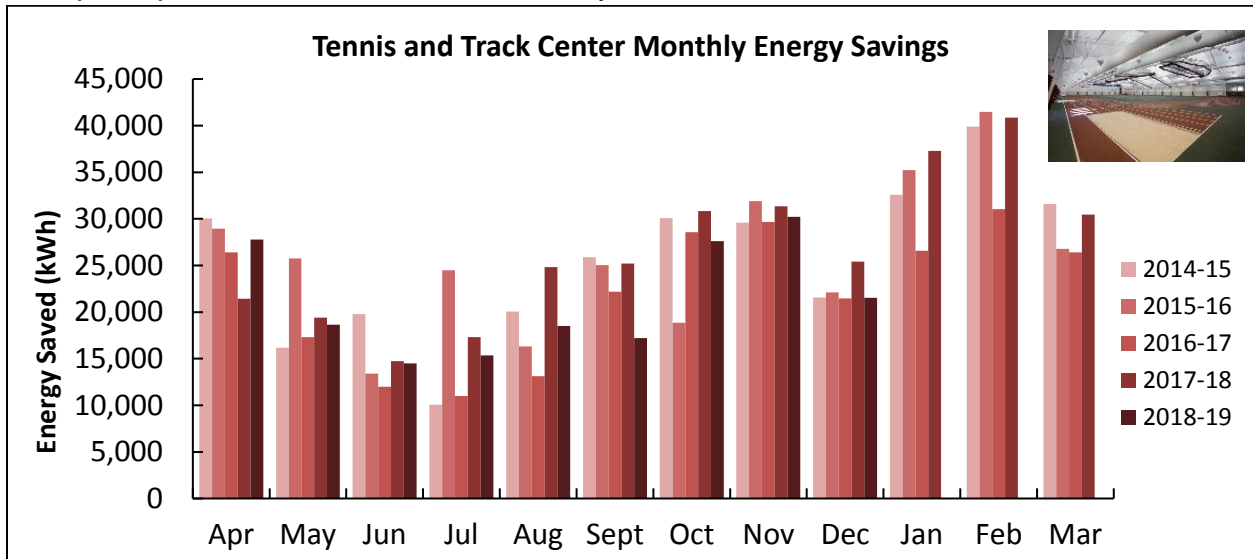
## Dormitory & Apartment Low-Flow Showerhead Project

In August 2013, 139 low-flow showerheads were installed in dormitory suites by Physical Plant. These showerheads have reduced flows by 0.72 gal/min on average. The low-flow showerhead project achieved financial payback in only 3 months. During summer 2014 and 2015, 231 additional showerheads were installed in the dorms and KE Apartments. Last quarter, the low-flow showerhead project saved an estimated 480,480 gallons of water, 336.26 MMBtu of natural gas, and \$4,678.38. At the end of December 2018, the low-flow showerhead project reached maturity and CERF will hand the project over to Physical Plant for monitoring and collecting the utility savings.



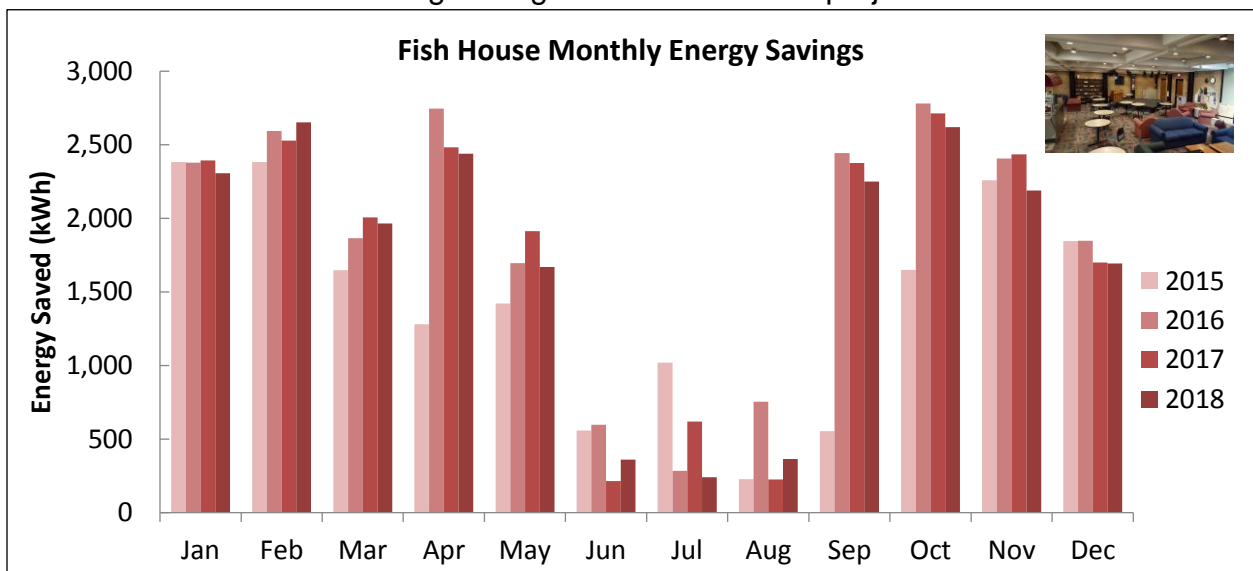
## Huizenga Tennis and Track Center Project

LED fixtures were installed in the Tennis and Track Center during Spring Break 2014. The project replaced 142 1,000-W metal halide lamps with 210-W and 160-W LED fixtures. CERF is grateful to donors who supported the T&T project with gifts to CERF. This past quarter, 85,959 kWh of electricity and \$6,417.34 were saved.



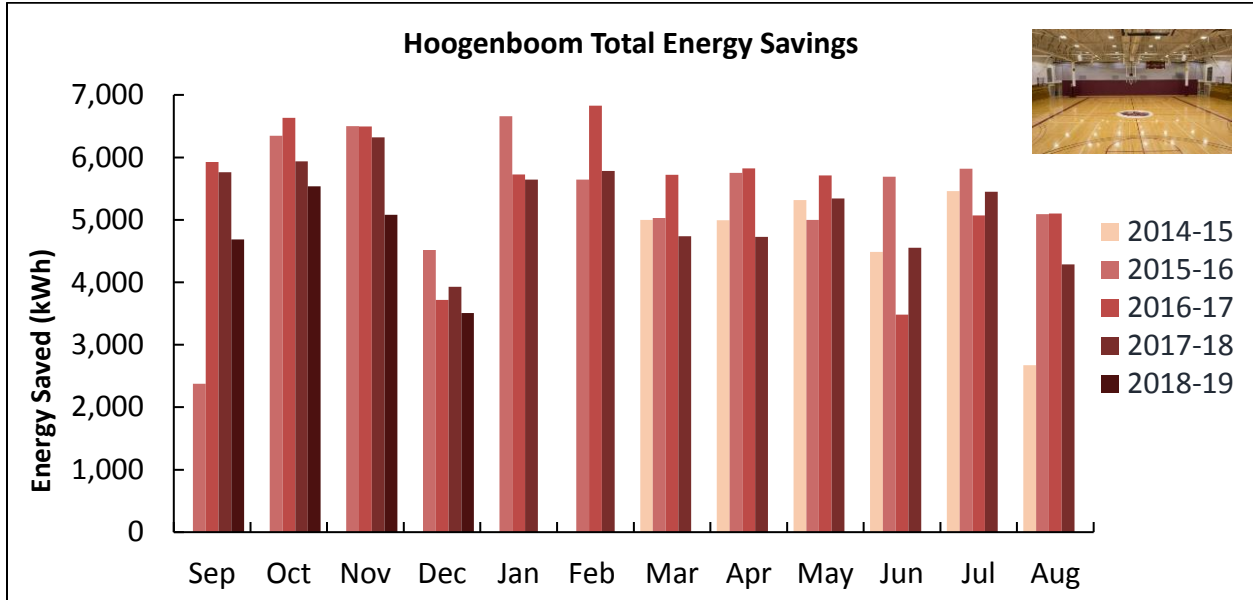
## Fish House Lighting Project

The Fish House is an area for students to drink coffee and study, but it is also a great opportunity to reduce energy consumption and costs. During January 2015, the CERF interns replaced 80 57-W incandescent lamps with 8.5-W LEDs. This past quarter, 6,500 kWh of energy and \$503.50 were saved. The project reached payback in December of 2016 and will continue to bring savings to CERF for new projects until December 2021.



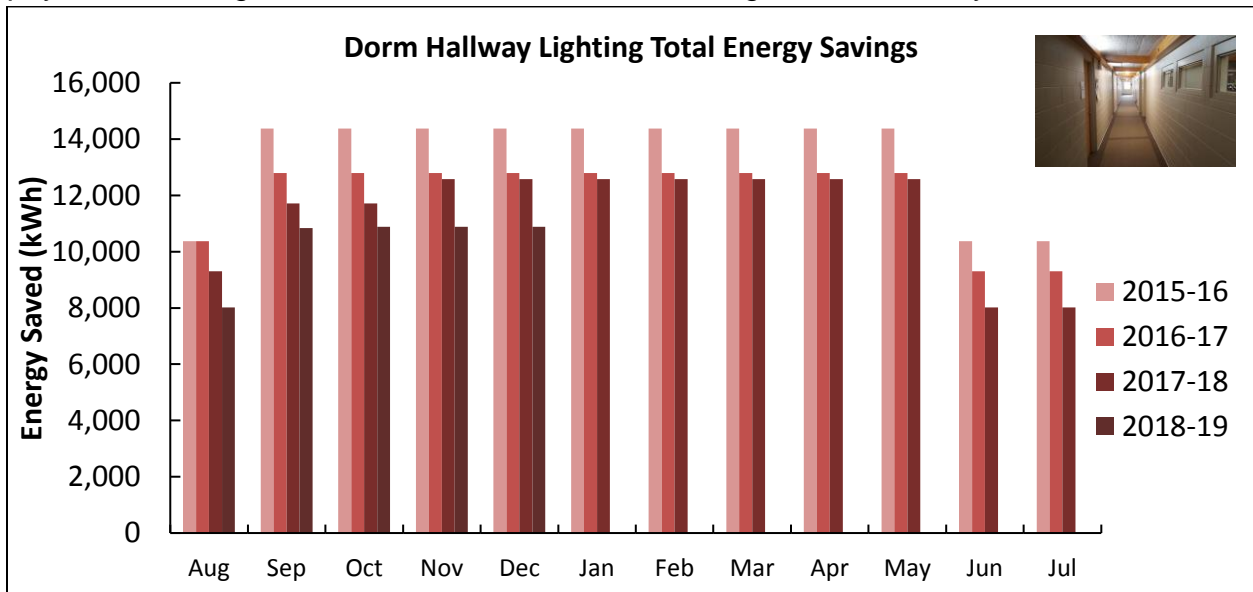
## Hoogenboom Lighting Project

The Physical Plant with CERF support replaced 51 400-W metal halide fixtures with energy efficient LEDs in the Hoogenboom gymnasium during Spring Break 2015. CERF is grateful to the donors who supported the Hoogenboom project. This past quarter 14,125 kWh of energy and \$1,172.05 were saved.



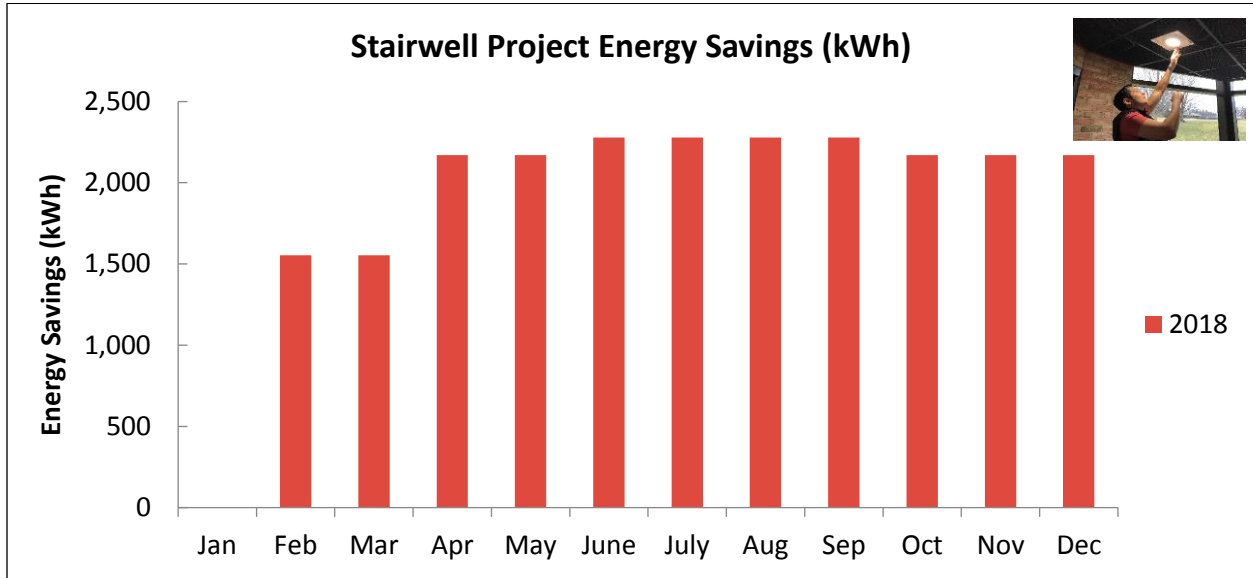
## Dorm Hallway Lighting Project

The Physical Plant with CERF support replaced fluorescent lamps with energy efficient LEDs in the Dorm Hallways during July 2015. This past quarter, 32,639 kWh of energy and \$2,651.13 were saved. As of December 2016, the project successfully reached payback allowing CERF to monitor and collect savings for five more years.



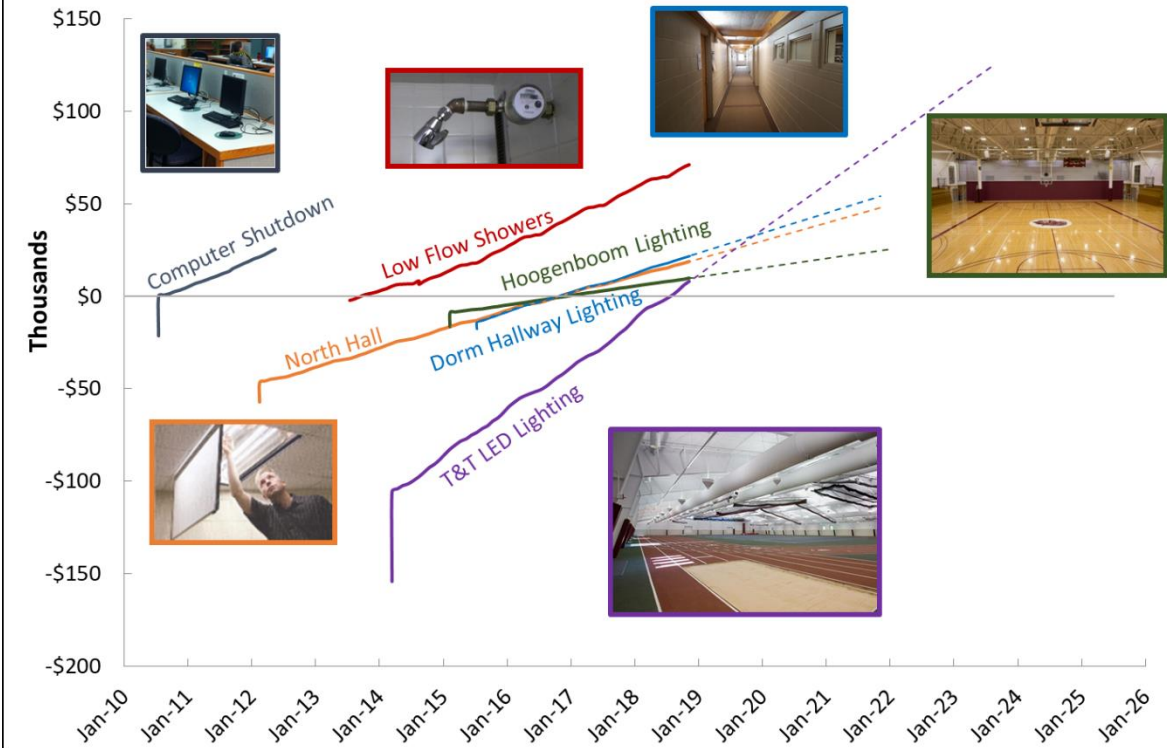
## Stairwells Relighting Project

Several stairwells on campus in the Science Building and Spoelhof Center provided an excellent opportunity to reduce energy consumption and costs. CERF interns replaced the incandescent lights in the Spoelhof Center stairwells with energy efficient LEDs during Interim 2018. During Spring Break 2018, Physical Plant with CERF support replaced fluorescent lamps in the Science Building stairwells. This past quarter, 6,513 kWh of energy and \$503.37 were saved.

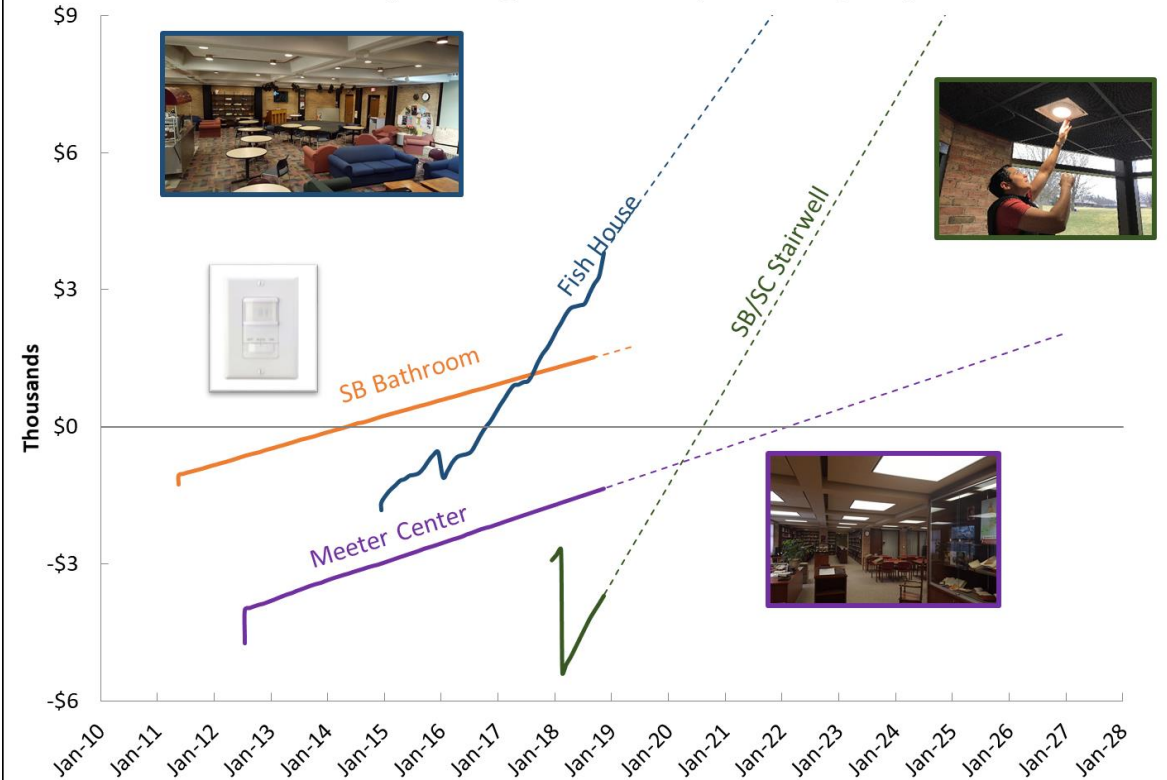




### CERF Project Progress Tracker (Large Projects)



### CERF Project Progress Tracker (Small Projects)




<b>Lifetime CERF Savings (as of January 2019)</b>	
Energy Savings (kWh)	<b>3,402,491</b>
Water Savings (gal)	<b>7,290,335</b>
Natural Gas Savings (MMBtu)	<b>5,080.17</b>
CO <sub>2</sub> Savings (metric tons)	<b>2,618.46</b>
Cost Savings	<b>\$348,790.69</b>

## CERF Project Status


Projects awaiting installation, active projects, and mature projects are shown on the project flowchart below.

ACTIONS	Project Proposal	Proposal Analysis	Proposal Approval/Rejection	Project Launch	Payback & Auditing Active Period			Project Hand-off
PROJECT TYPES	Proposed Project	Pending Proposal	Pending Proposal (Inactive Proposal)	Active Project				Mature Project
ACTIVE PARTICIPANTS	Project Proposer	CERF Intern	CERF Manager	Environmental Stewardship Committee	Project Implementer	Project Auditor	CERF Intern	Calvin College
CERF CASH FLOW		(-) Intern wage			(-) Installation	(-) Maintenance	(+) Audited Savings	
CALVIN BUDGET CASH FLOW								(-) Maintenance (+) Savings
TIME	→							


**Hiemenga Hallway**



**Stairwell Lighting**




**Meeter Center**




**T&T Lighting**



**Dorm Hallway Lighting**



**North Hall Lighting**



**SB Bathroom Lighting**



**Fish House Lighting**




**Hoogenboom Lighting**



**Computer Shutdown**



**Low-Flow Showerhead Replacement**



### Key

- Awaiting Installation
- Yet to Break-Even
- Past Break-Even
- Mature Project



## Summary of Project Activity for October – December 2018

### Active Projects

Project #	Start Date	Title	Energy Cost Savings	Electricity Savings	CO <sub>2</sub> Savings
2010F0023	Jun 2011	SB Bathroom Motion Sensors	\$ 85.56	1,325 kWh	0.91 tonnes
2011S0038	Mar 2012	North Hall Lighting	\$ 2,237.67	26,986 kWh	18.62 tonnes
2011S0037	Aug 2012	Meeter Center Lighting	\$ 102.69	1,047 kWh	0.72 tonnes
2012S0052	Mar 2014	Tennis and Track Center Metal Halide Replacement	\$ 6,417.34	85,959 kWh	59.31 tonnes
2014F0084	Jan 2015	Fish House Lighting	\$ 503.50	6,500 kWh	4.48 tonnes
2014S0082	Mar 2015	Hoogenboom Lighting	\$ 1,172.05	14,125 kWh	9.75 tonnes
2013F0069	Aug 2015	Dorm Hallway Lighting	\$ 2,651.13	32,639 kWh	22.52 tonnes
2016S0098	Feb 2018	Stairwells Relighting	\$ 503.37	6,513 kWh	4.49 tonnes

### Mature Projects

Project #	Dates	Title	Total Energy Cost Savings	Total Energy Savings	Total CO <sub>2</sub> Savings
2010S0001	Aug 2010– Jun 2012	CIT Computer Power Management	\$ 25,547.87	435,975 kWh	300.82 tonnes

Project #	Dates	Title	Total Cost Savings	Total Water Savings	Total Natural Gas Savings	Total CO <sub>2</sub> Savings
2012S0054	Aug 2013– Dec 2018	Low-Flow Showerheads	\$ 73,427.59	7,290,335 gallons	5,080.17 MMBtu	269.25 tonnes

### Recent and Upcoming CERF Activity

This fall, a new student intern was hired to join the CERF team. The new intern will be focused on designing, programming, and constructing Raspberry Pi computers to aid in the monitoring of new and existing CERF projects. CERF energy interns began investigating new lighting projects in the Engineering Building and DeVos Communication Center. In addition, Matthew Heun is in the process of stepping down as the CERF manager and is giving management over to Russell Bray, Director of Physical Plant.

## Financial Summary for October – December 2018

Gifts	\$9,705.00
Energy Cost Savings	\$18,351.69
Expenses	(\$4,272.09)
<hr/>	
Net for Oct - Dec 2018 Quarter	\$23,784.60

## About CERF

The Calvin Energy Recovery Fund (CERF) is an award-winning Green Revolving Fund that improves energy efficiency and reduces carbon dioxide emissions on campus.<sup>1</sup> The energy savings from CERF projects are routed back into the fund for five years after project payoff, thereby growing the fund to support future projects.

Calvin provided initial seed funding for the student-proposed fund in September 2009, and the college's Environmental and Energy Sustainability Committee (EESC) approved policies governing CERF in March 2010.

Students are involved in project proposal, analysis, implementation, monitoring, and reporting, providing opportunities for curricular and extracurricular learning on environmental and energy stewardship and fiscal responsibility.

### **CERF Information:**

**EESC Chair:** Matthew Heun

**CERF Manager:** Russell Bray

**Physical Plant Liaison:** Russell Bray

### **CERF Energy Interns:**

Michael Hansen, Adam Marquardt

### **CERF Data Acquisition Interns:**

Peter Haagsma, Denise Roorda

To learn more about CERF or submit a project idea:

**[www.calvin.edu/support/energy](http://www.calvin.edu/support/energy)**

To make a financial investment in CERF:

**[www.calvin.edu/go/energy](http://www.calvin.edu/go/energy)**

<sup>1</sup> [http://www.mlive.com/business/west-michigan/index.ssf/2010/09/green\\_awards\\_2010\\_calvin\\_colle.html](http://www.mlive.com/business/west-michigan/index.ssf/2010/09/green_awards_2010_calvin_colle.html)