

# CALVIN

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

**January –  
March 2018**

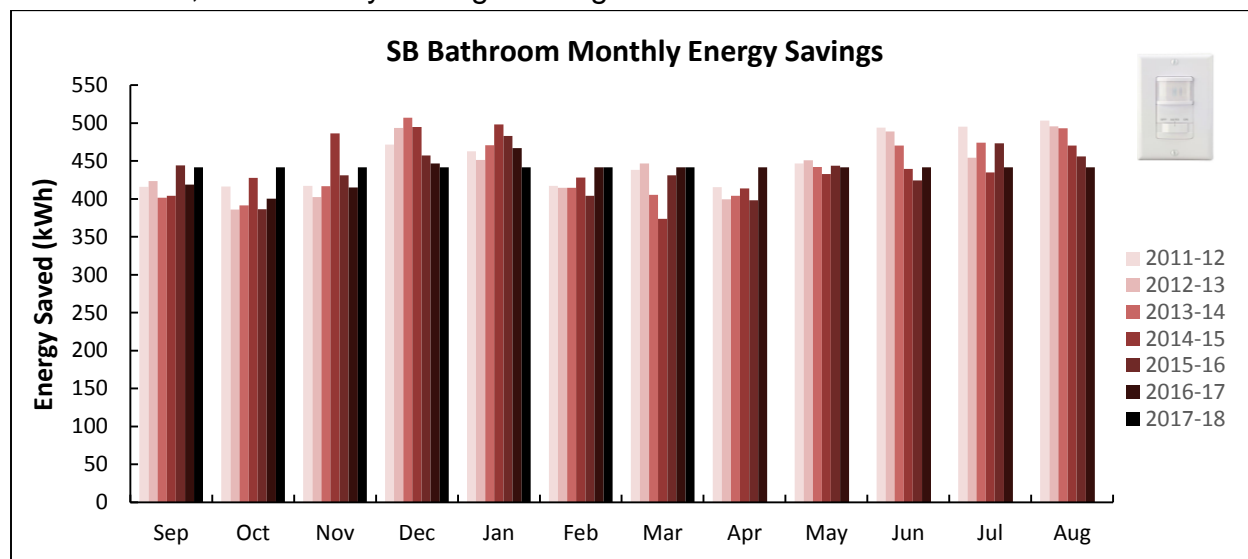
**Prepared by:  
Michael Hansen  
Adam Marquardt  
Elvin Vindel**

**April 2018**



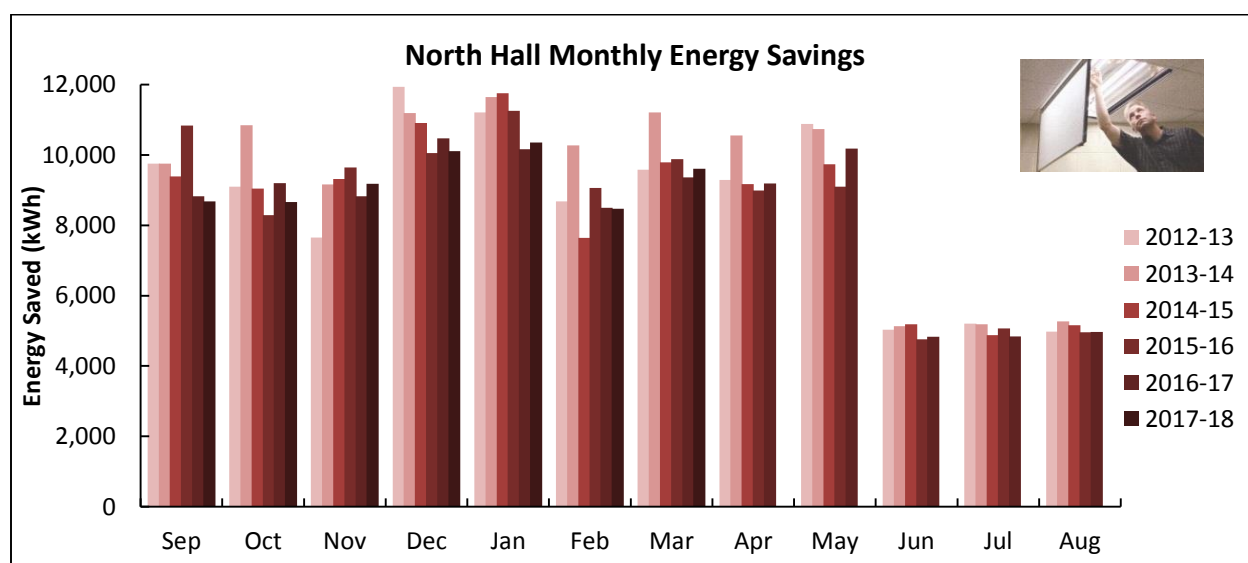
## Science Building Bathroom Motion Sensor Project

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.



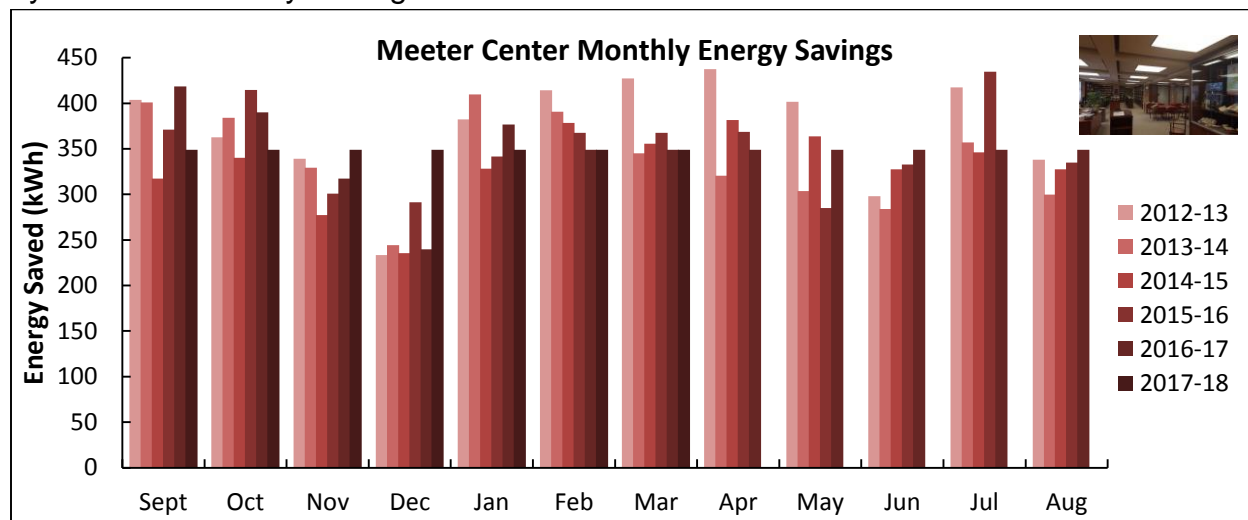
## North Hall Lighting Project

The North Hall lighting project continues to accumulate significant energy savings for Calvin. This past quarter, the North Hall lighting project saved 28,433 kWh and \$2,426.28. The project reached payback in December of 2016 and will add funds for an additional five years through the fall of 2021.



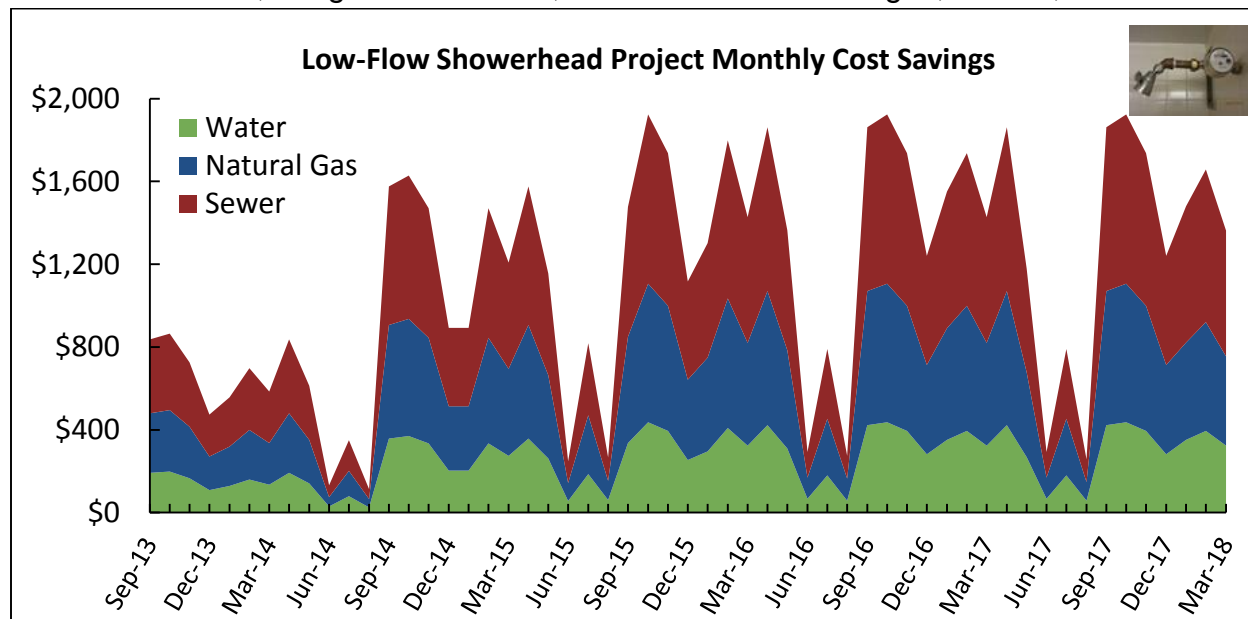
## Meeter Center Lighting Project

The Hekman Library's Meeter Center project continues to produce consistent savings. Last quarter, 1,047 kWh and \$102.69 were saved. Like the Science Building Bathroom project, detailed monitoring for the Meeter Center has stopped. We now estimate savings by historical monthly averages.



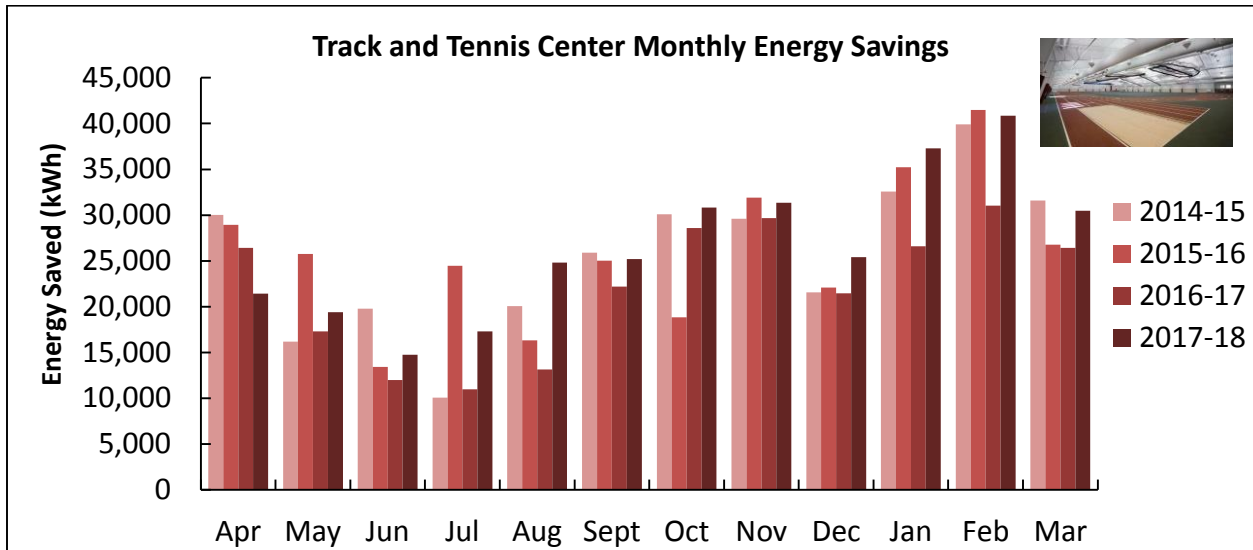
## Dormitory & Apartment Low-Flow Showerhead Project

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, 169 showerheads were installed in the dorms. During summer 2015, 62 showerheads were installed in the KE Apartments. Last quarter, the low-flow showerhead project saved an estimated 462,233 gallons of water, 323 MMBtu of natural gas, and \$4,500.72.



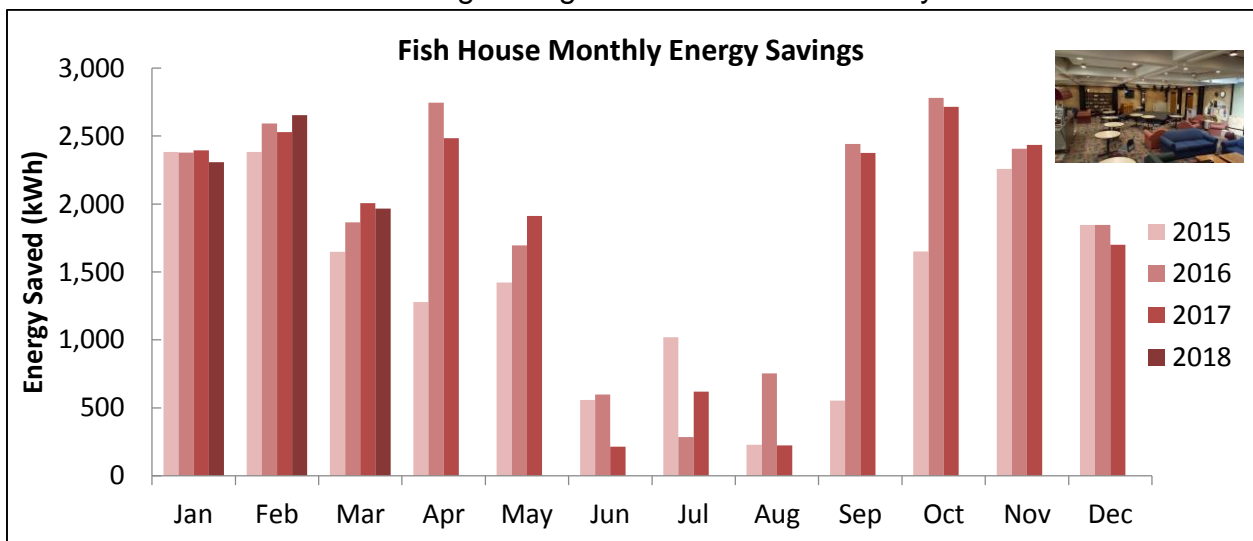
## Huizenga Track and Tennis Center Project

LED fixtures were installed in the Track and Tennis 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, 108,608 kWh of electricity and \$8,745.94 were saved.



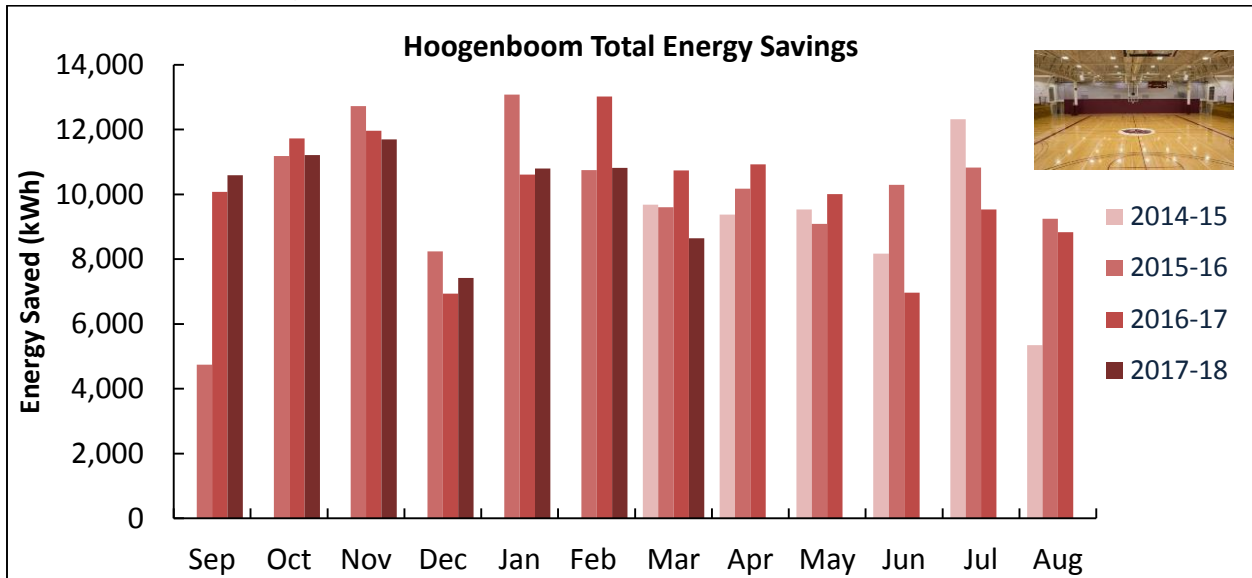
## Fish House Lighting Project

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, 6,925 kWh of energy and \$549.16 were saved. The project reached payback in December of 2016 and will continue to bring savings to CERF for five more years.



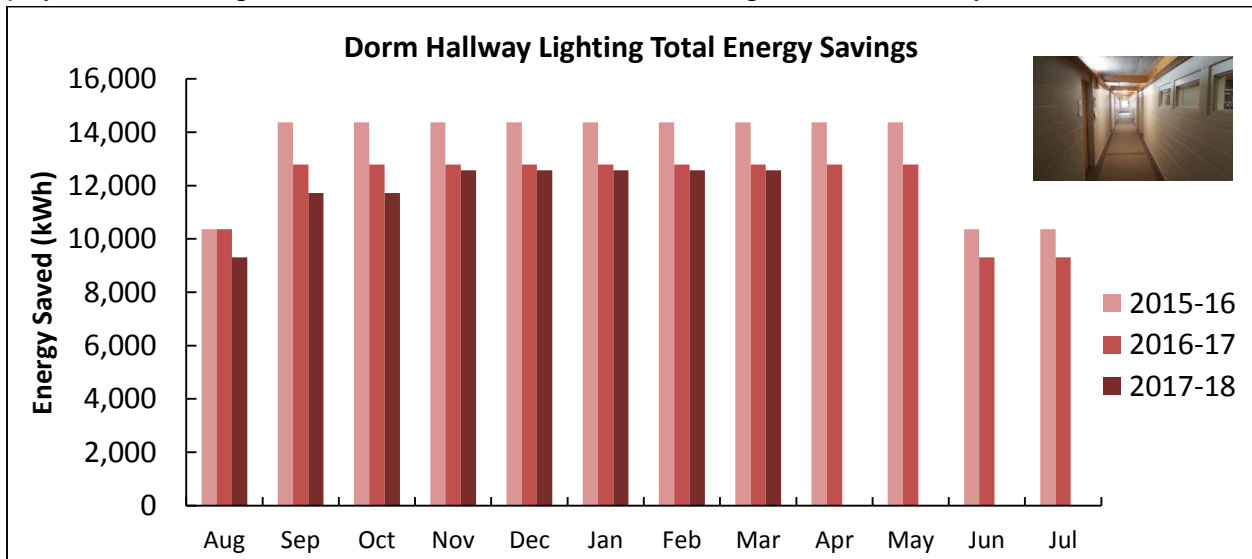
## Hoogenboom Lighting Project

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, 30,259 kWh of energy and \$2,414.19 were saved.



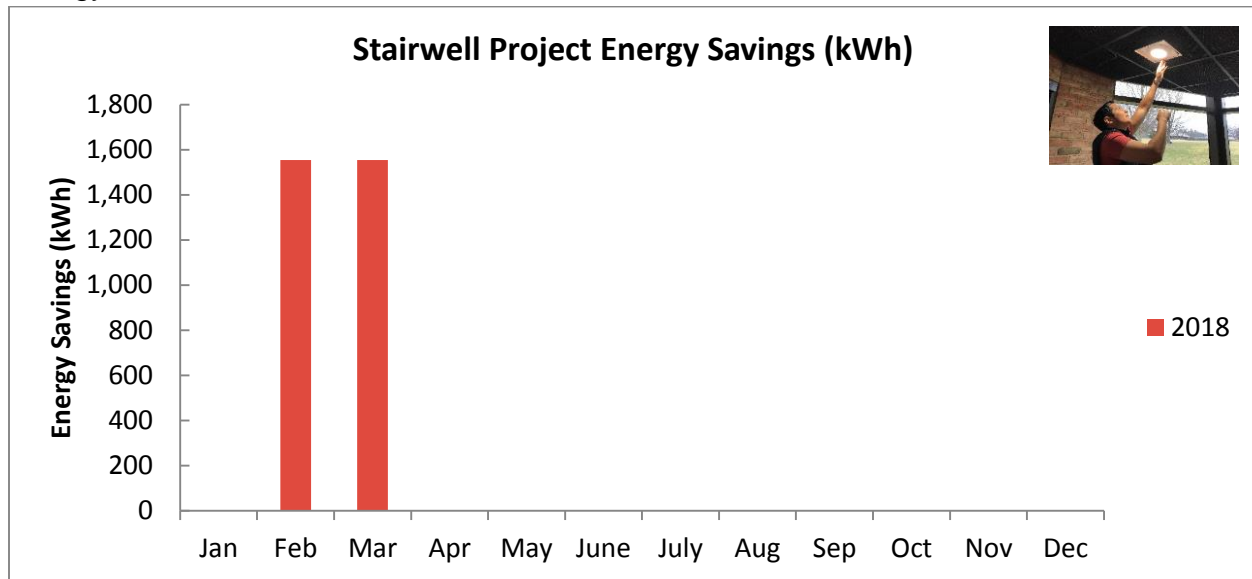
## Dorm Hallway Lighting Project

The Physical Plant with CERF support replaced fluorescent lamps with energy efficient LEDs in the Dorm Hallways during July 2015. This past quarter, 37,728 kWh of energy and \$3,125.16 were saved. As of December 2016, the project successfully reached payback allowing CERF to monitor and collect savings for five more years.

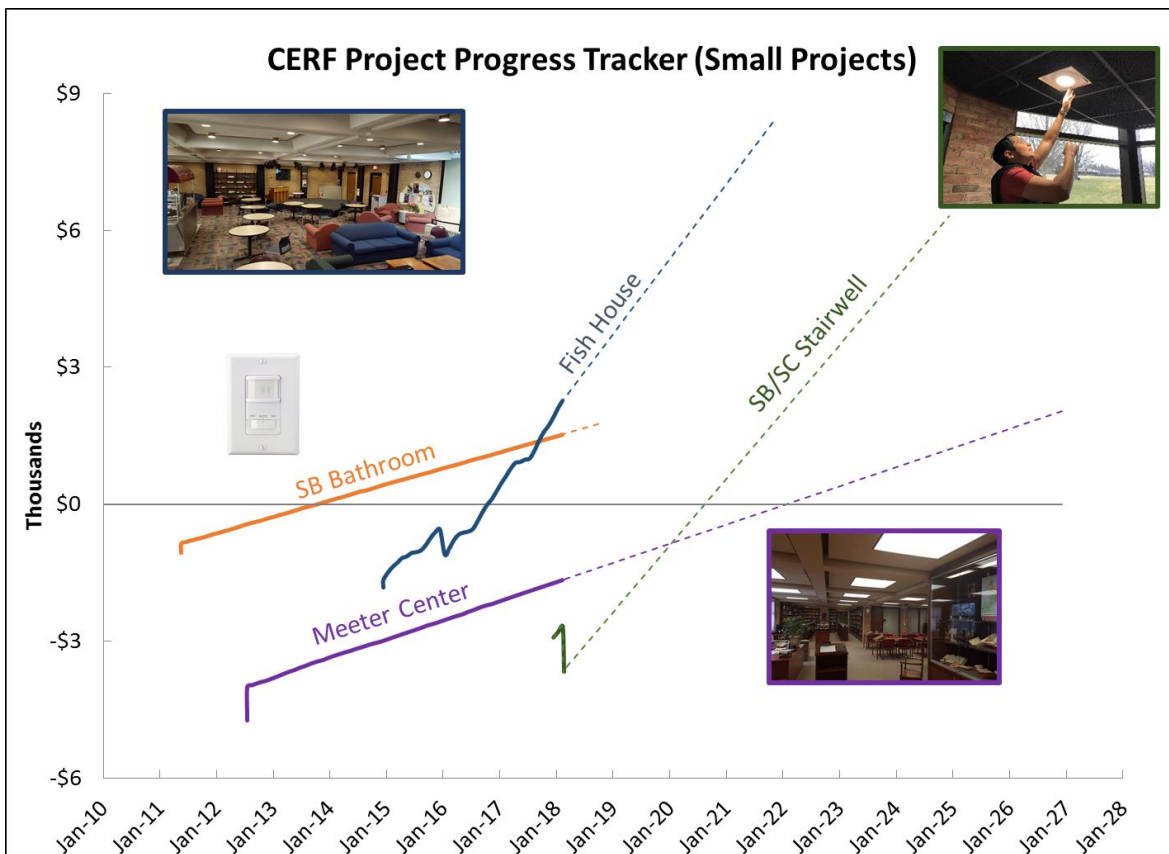
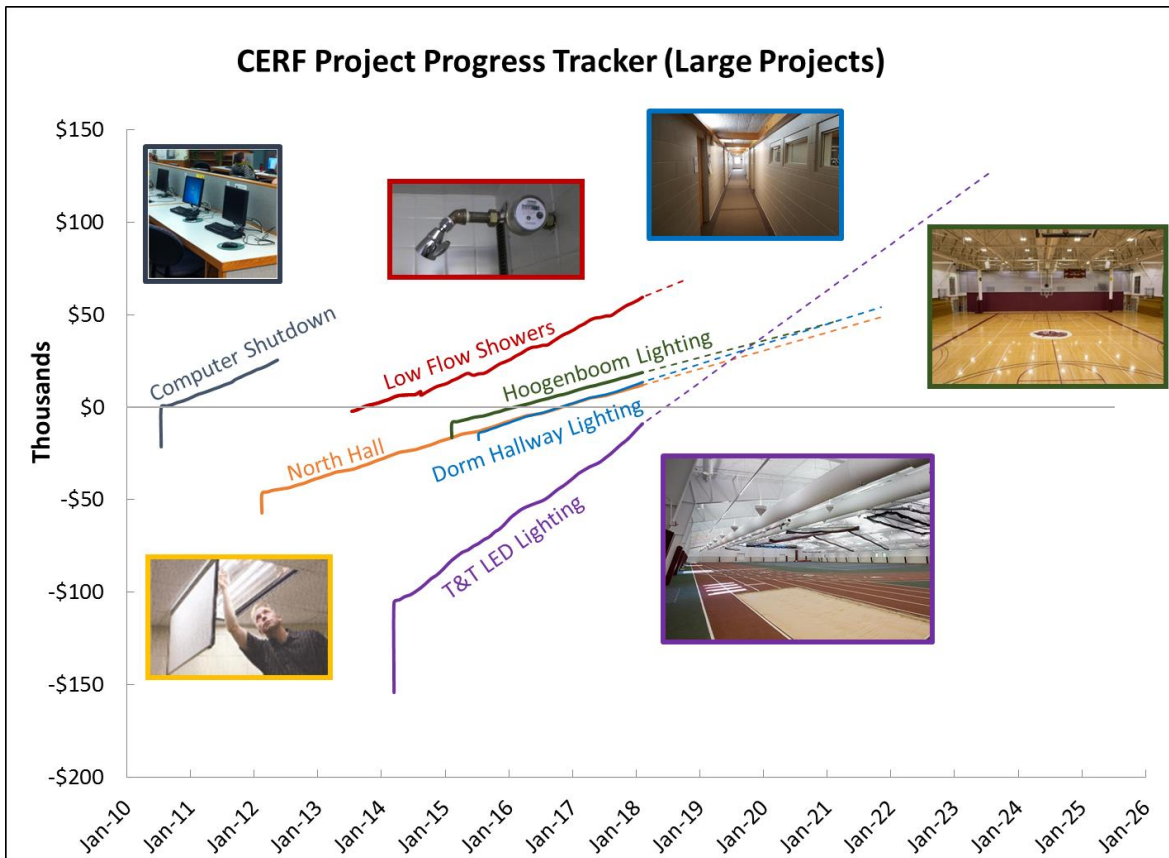


## Stairwells Relighting Project

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, 3,107 kWh of energy and \$243.60 were saved.



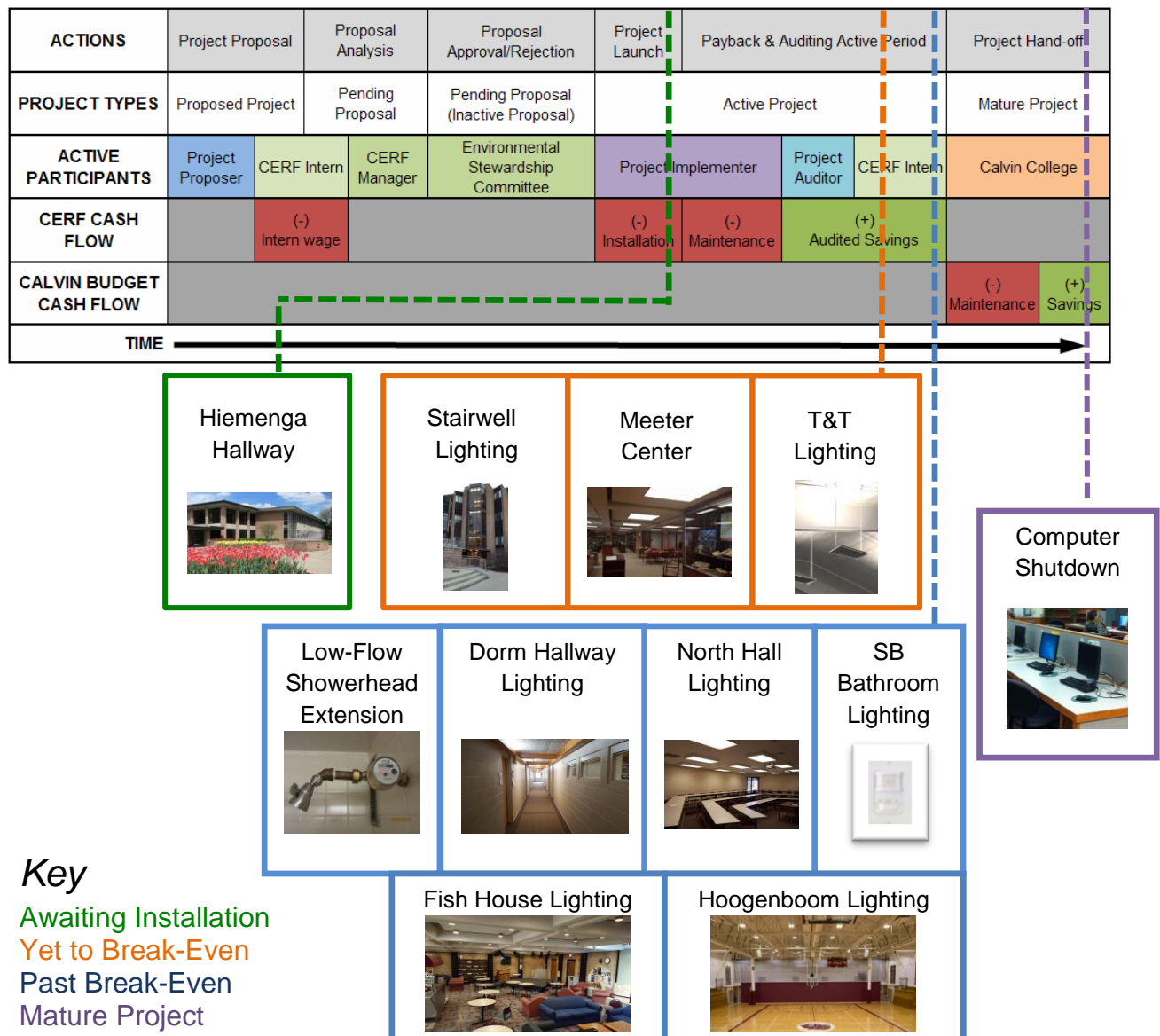




<b>Lifetime CERF Savings (as of March 2018)</b>	
Energy Savings (kWh)	<b>3,132,891</b>
Water Savings (gal)	<b>6,197,882</b>
Natural Gas Savings (MMBtu)	<b>4,316</b>
CO <sub>2</sub> Savings (metric tons)	<b>2,390</b>
Cost Savings	<b>\$313,165.99</b>

## CERF Project Status

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





## Summary of Project Activity for January – March 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	\$ 2,426.28	28,433 kWh	19.62 tonnes	
2011S0037	Aug 2012	Meeter Center Lighting	\$ 102.69	1,047 kWh	0.72 tonnes	
2012S0052	Mar 2014	Track and Tennis Center Metal Halide Replacement	\$ 8,745.94	108,608 kWh	74.94 tonnes	
2014F0084	Jan 2015	Fish House Lighting	\$ 549.16	6,925 kWh	74.78 tonnes	
2014S0082	Mar 2015	Hoogenboom Lighting	\$ 2,414.19	30,259 kWh	20.88 tonnes	
2013F0069	Aug 2015	Dorm Hallway Lighting	\$ 3,125.16	37,728 kWh	26.03 tonnes	
2016S0098	Feb 2018	Stairwells Relighting	\$243.60	3,107 kWh	2.14 tonnes	
Project #	Start Date	Title	Total Cost Savings	Water Savings	Natural Gas Savings	CO <sub>2</sub> Savings
2012S0054	July-Aug 2013	Low-Flow Showerheads (estimates)	\$4,500.72	462,233 gals	323.49 MMBtu	17.14 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

### Recent and Upcoming CERF Activity

The two CERF projects approved by the Environmental and Energy Sustainability Committee (EESC) in the spring of 2017, the Hiemenga Hall Relighting Project and Stairwell Project, are being implemented and beginning to generate savings for the college. In addition, CERF is continuing to look into two potential new lighting projects. The first project is a lighting retrofit of the metal halide and compact fluorescent lights in the Van Noord Arena with new arena lights and controls. The second project consists of replacing the existing T12 fluorescent fixtures with new LED fixtures in the Spoelhof Center basement in the Art and Art History departments.

This spring, three new student interns were hired to join the CERF team. Two of the interns will be focused on designing, programming, and constructing Raspberry Pi computers to aid in the monitoring of new and existing CERF projects, and the third intern will focus on the finding, proposing, and monitoring future CERF energy efficiency projects.

## Financial Summary for January – March 2018

Gifts	\$1,081.02
Energy Cost Savings	\$21,949.70
Expenses	(\$3,846.37)
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Net for Jan – Mar 2018 Quarter	\$19,184.35

## 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:** Gail Heffner

**CERF Manager:** Matthew Heun

**Physical Plant Liaison:** Jack Phillips

**CERF Energy Interns:** Elvin Vindel,  
Michael Hansen, Adam Marquardt

**CERF Pi Interns:** Jacob Dugger,  
Paul Swanson, Peter Haagsma

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)**

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<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)