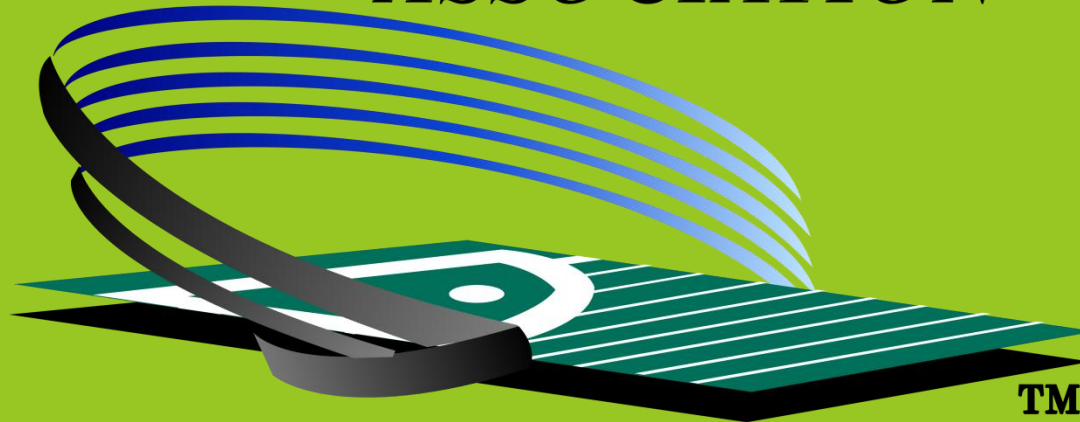


*STADIUM  
MANAGERS  
ASSOCIATION*



**GREEN POWER PARTNERSHIP**

**A GREENER  
4 GAME**



**TEAM**



**NCS<sup>4</sup>**  

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**SOUTHERN MISS**



**GREEN  
SPORTS  
ALLIANCE**

# GAME CHANGER

## HOW THE SPORTS INDUSTRY IS SAVING THE ENVIRONMENT



**PREFACE** Major League Baseball Commissioner Allan H. (Bud) Selig

**AFTERWORD** Martin Tull, Executive Director, Green Sports Alliance

**PROJECT DIRECTOR**

Allen Hershkowitz, Ph.D.

*Senior Scientist  
Natural Resources  
Defense Council*

*Co-Founder,  
Green Sports Alliance*

**PRINCIPAL AUTHORS**

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*Natural Resources  
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**CONTRIBUTING AUTHOR**

Jessica Esposito

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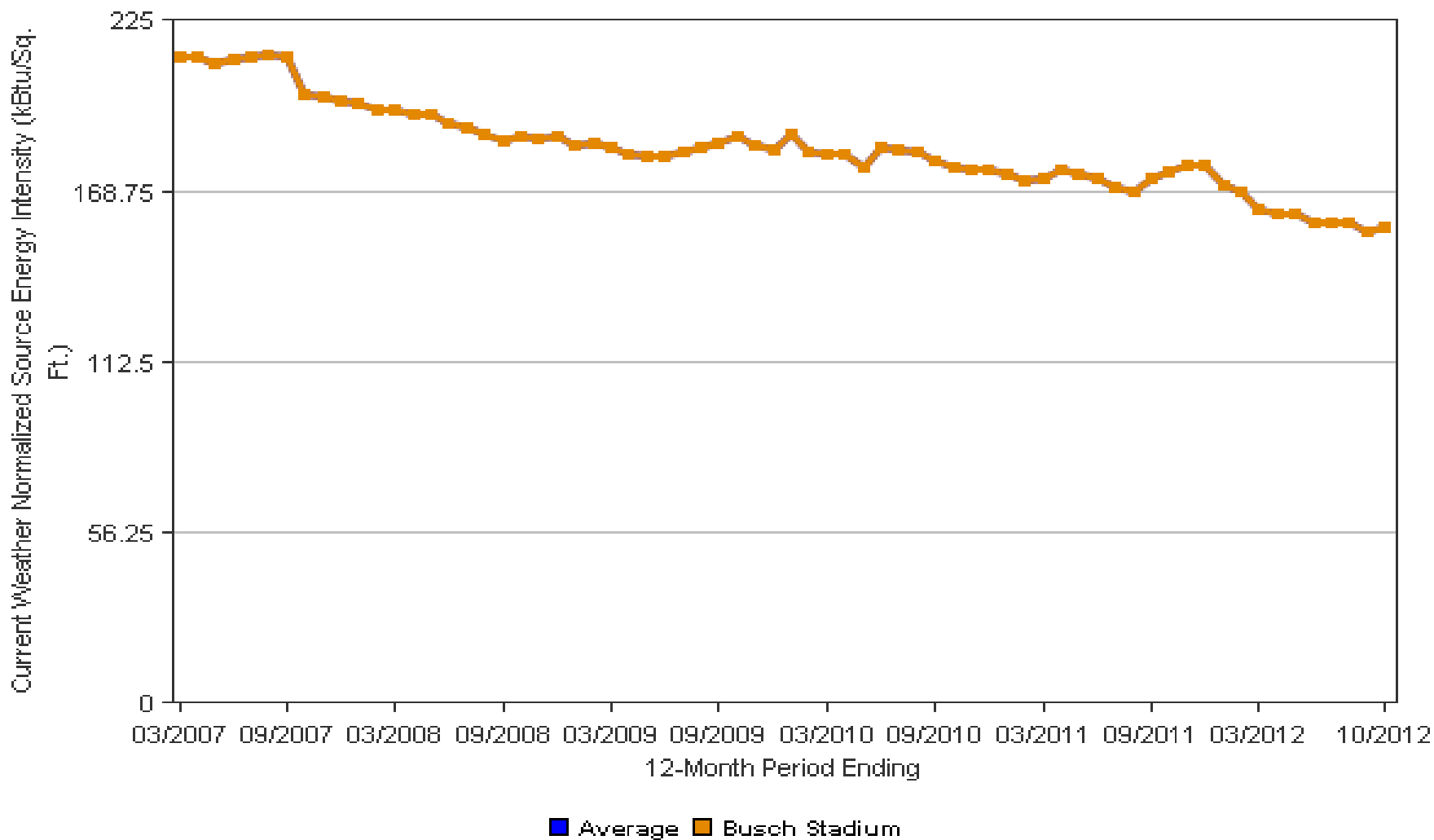
**RESEARCH ASSISTANT**

Johanna Lewis

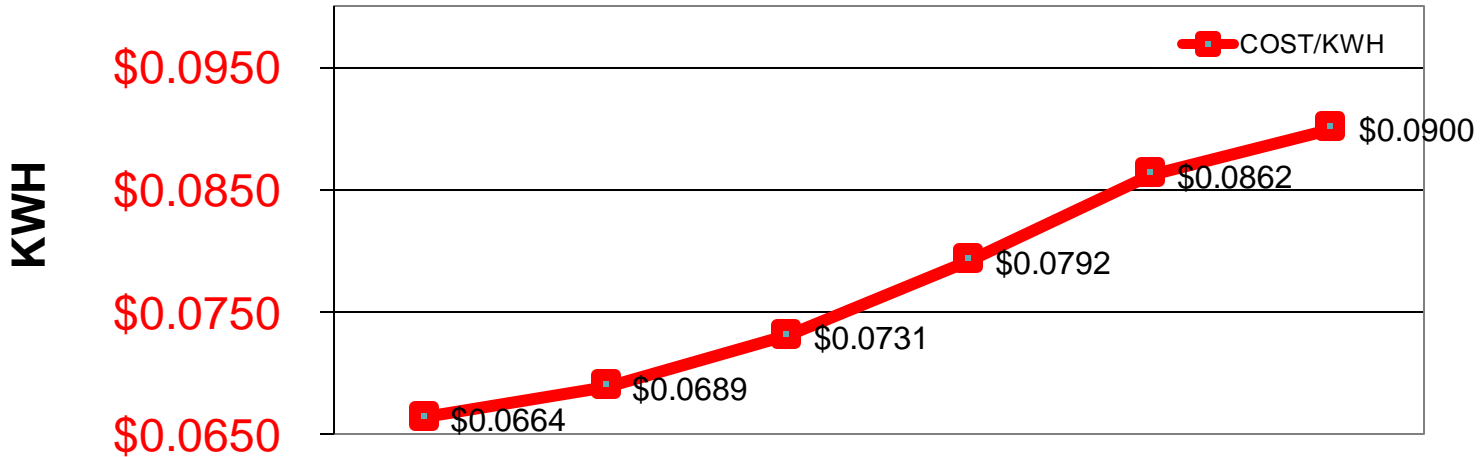
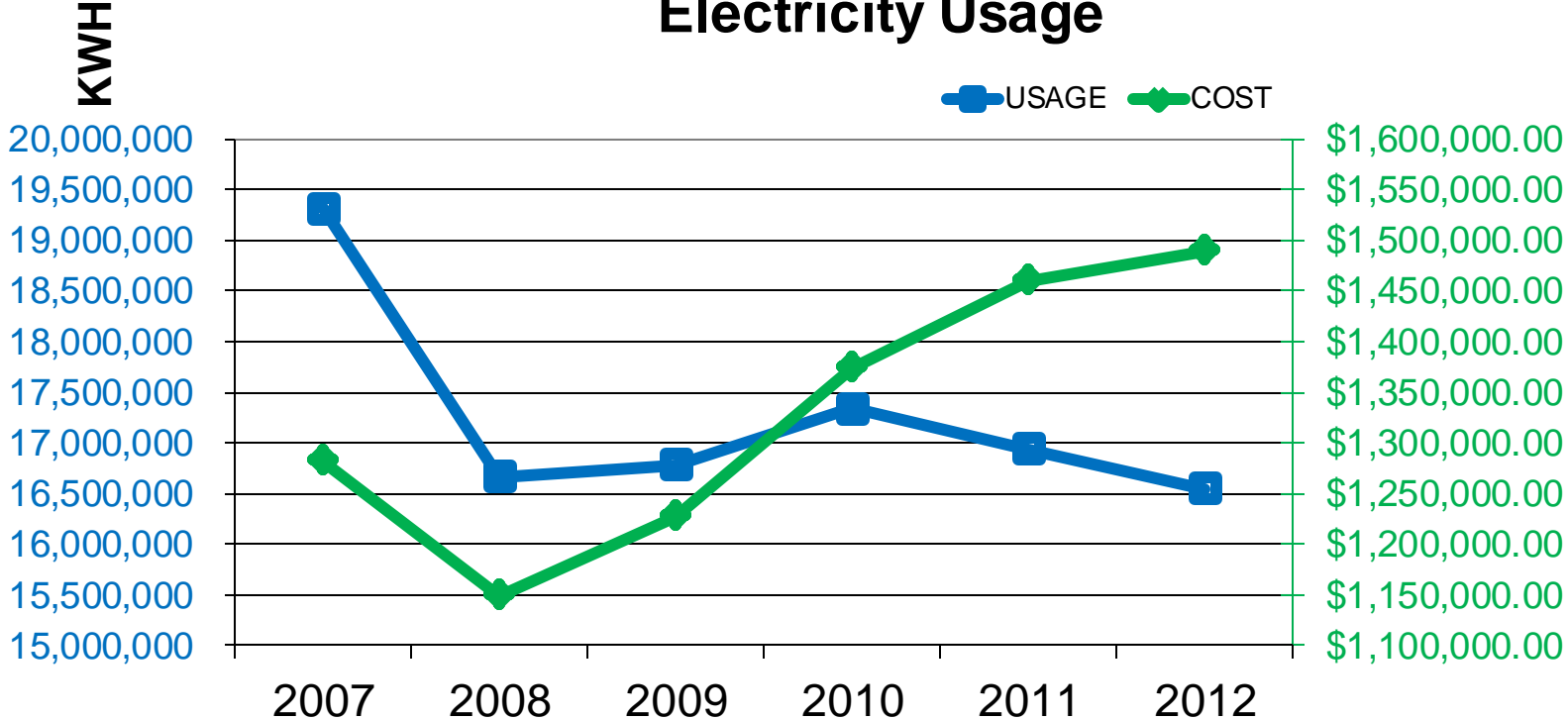
*Natural Resources  
Defense Council*

# BUSCH STADIUM 2007 -2012

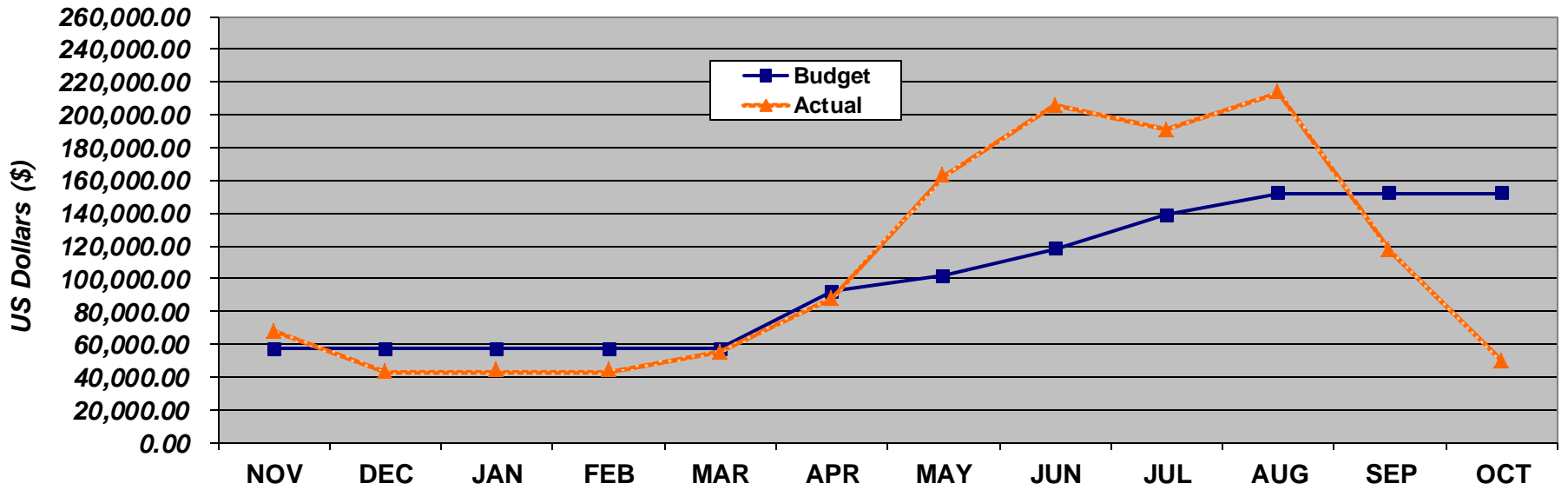
## WEATHER NORMALIZED SOURCE ENERGY INTENSITY



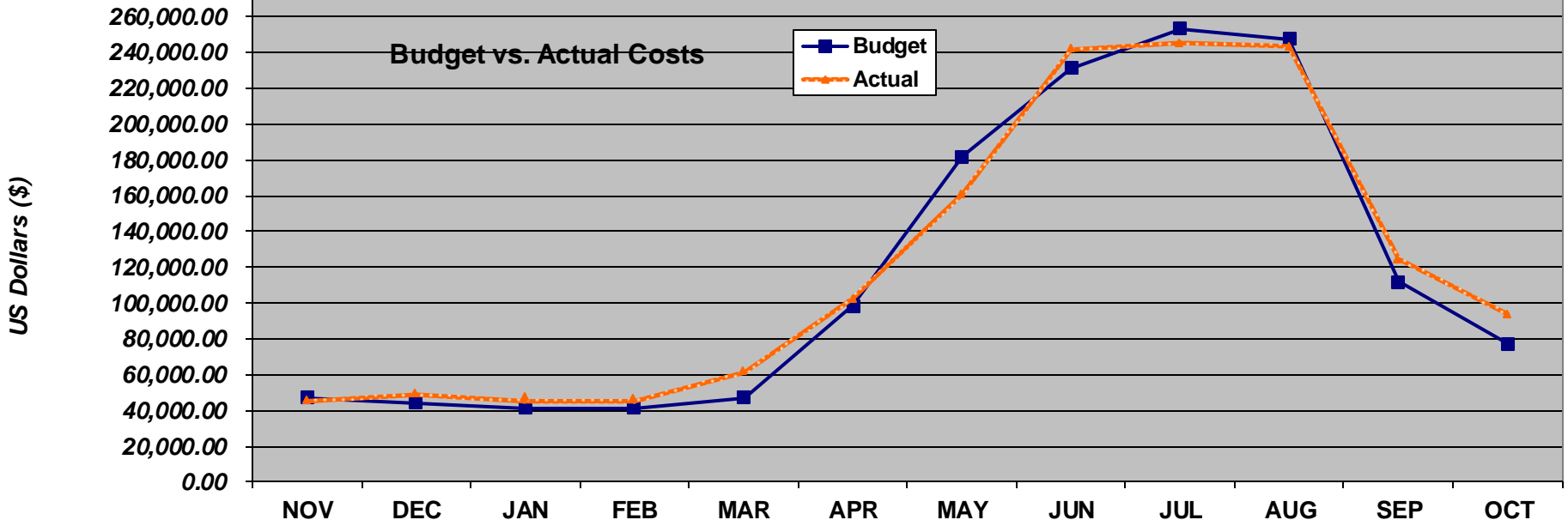
# Electricity Usage



### Budget vs. Actual Costs



### Budget vs. Actual Costs



# Ameren Business Efficiency Program



Year	Amount	Project
2011	\$ 250,000	Energy Audit, Lighting
2010	\$ 90,000	Retro- commissioning
2009	\$ 11,000	Lighting controls

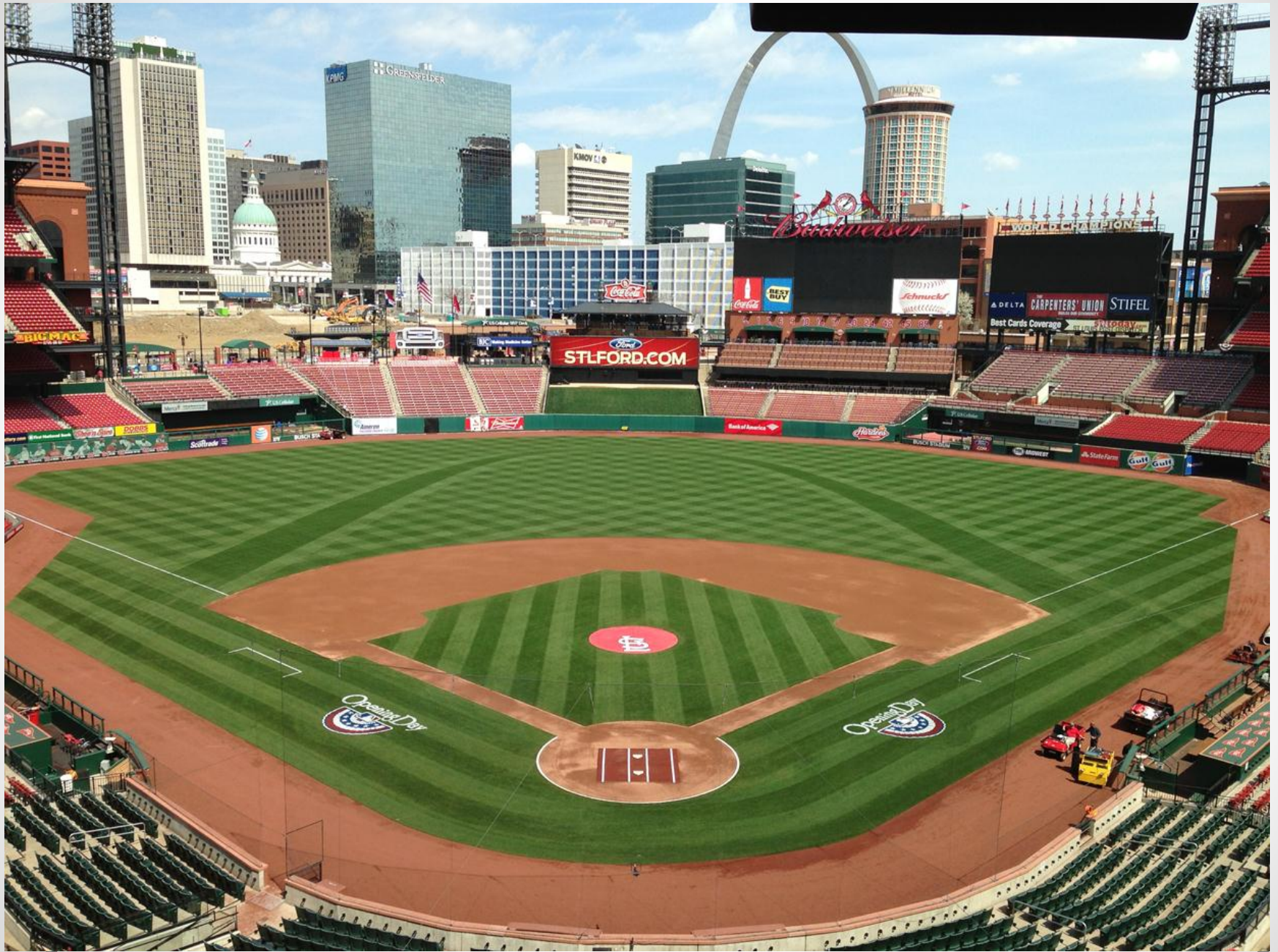
\$42,000 in Missouri DNR State Energy Program grant funds from 2011 – steam plant upgrade.

# BUSCH STADIUM – ST. LOUIS CARDINALS

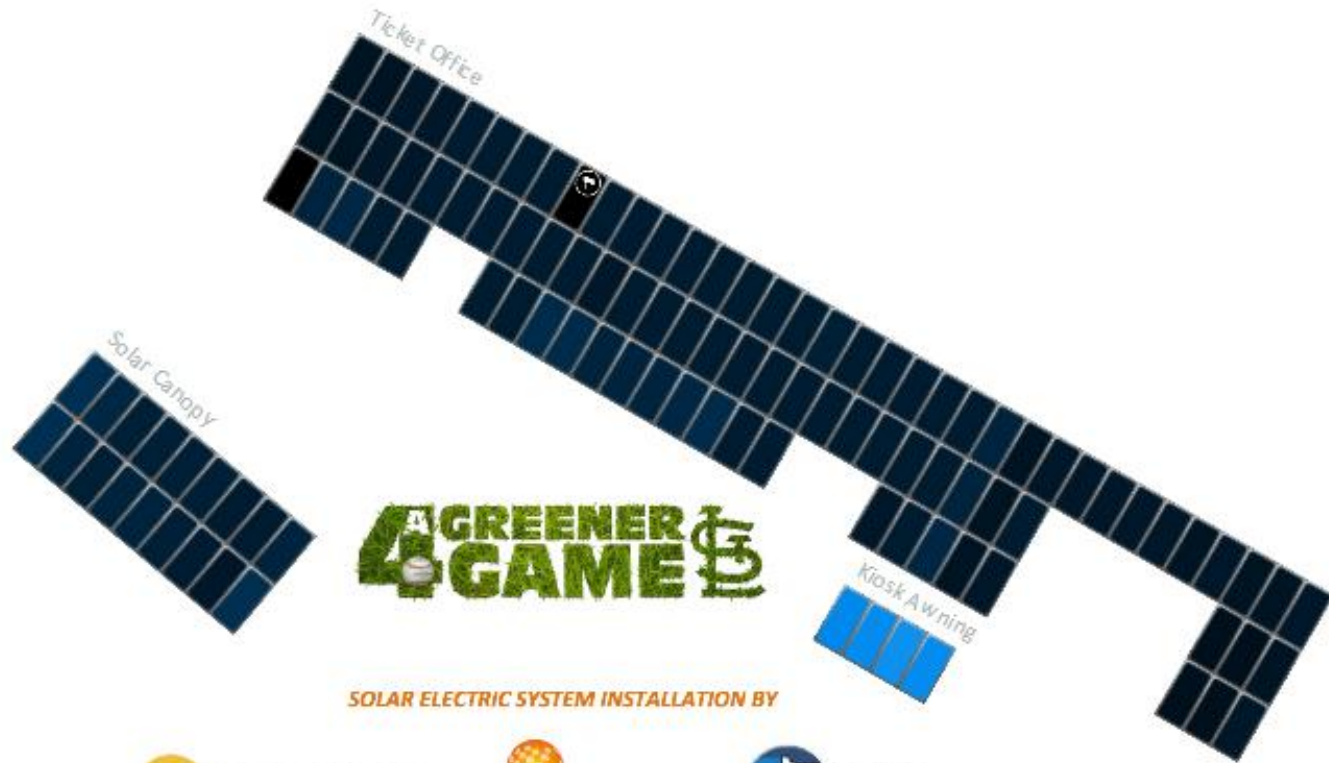
## OWNER'S MANUAL











System Energy  
**11.6 kWh**



**Sachs Electric**  
employee owned



Microgrid Solar



**ELECTRICAL**  
CONNECTION, INC.  
BEVERLY, MA





**Cardinals PV Project**  
25kW Array: Ticket Building & Concession Stand



**Cost Breakdown**

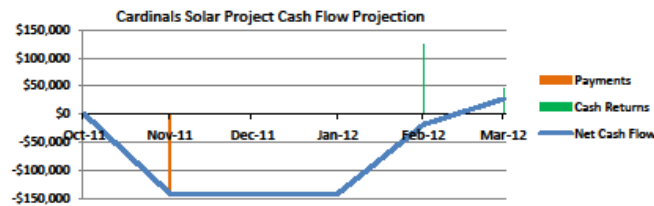
Amount	Description	Responsible Party
\$ 86,235	Solar Equipment Cost (modules, inverters, inverter cabling, racking, gateway unit, ballast)	Microgrid
31,200	Metal roof and support structure for Concession Stand - materials and labor	Lawrence Fabric
29,000	Solar Installation labor	Sachs
15,000	Project management, solar design & structural engineering, procurement, utility/incentives paperwork, 1-year monitoring and maintenance package	Microgrid
6,554	Sales Tax	Microgrid
3,000	Shipping Cost (estimated)	Microgrid
19,000	Kiosk (estimated cost per breakdown below)	Microgrid/Sachs
<b>\$ 189,989</b>	<b>TOTAL PROJECT COST</b>	

Touchscreen Kiosk (included above)		
\$ 15,000	Touchscreen Kiosk Allowance	Microgrid
2,000	Kiosk design, procurement, configuration, website assistance	Microgrid
2,000	Installation Labor (allowance)	Sachs
<b>\$ 19,000</b>	<b>TOTAL</b>	

Cash Flows	
\$ 50,000	Ameren Solar Rebate
51,297	1603 Treasury Grant
45,736	Cash Value of Bonus Depreciation (estimated)
50,000	IBEW / NECA /Sachs Marketing Package
15,000	Microgrid Recognition as Integrator
<b>\$ 212,033</b>	<b>TOTAL CASH FLOW</b>

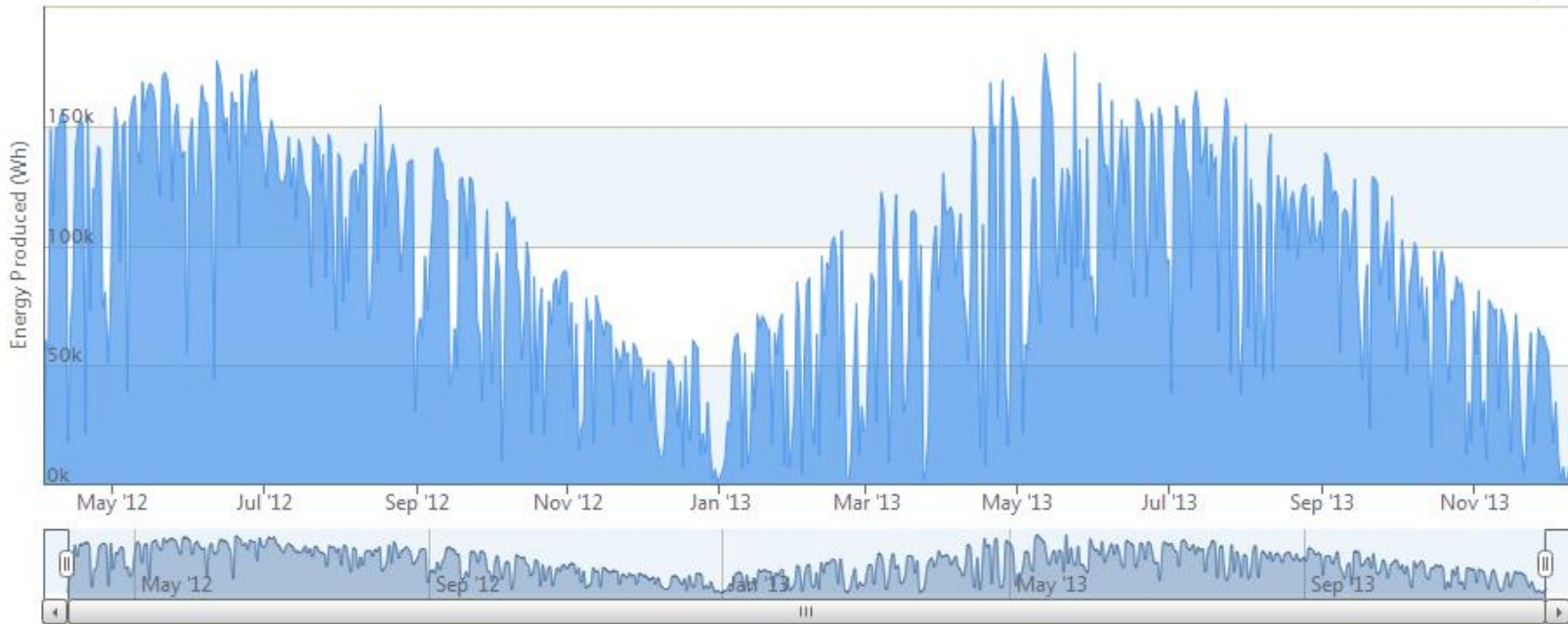
<b>\$ (23,692)</b>	<b>Net Cashflow Not Including Depreciation</b>
<b>\$ 22,044</b>	<b>Net Cashflow Including the After-Tax Value of Depreciation</b>

Due to requirement for the 30% Treasury Grant to be paid on total project value, the Cardinals will have to 'cash flow' the project until the incentives are paid. That typically takes 45-60 days after completion. Maximum cash position is approximately -\$142,000.



Energy: Lifetime

Apr 3, 2012 - Dec 10, 2013



Energy Produced

Maximum Produced  
**181 kWh**

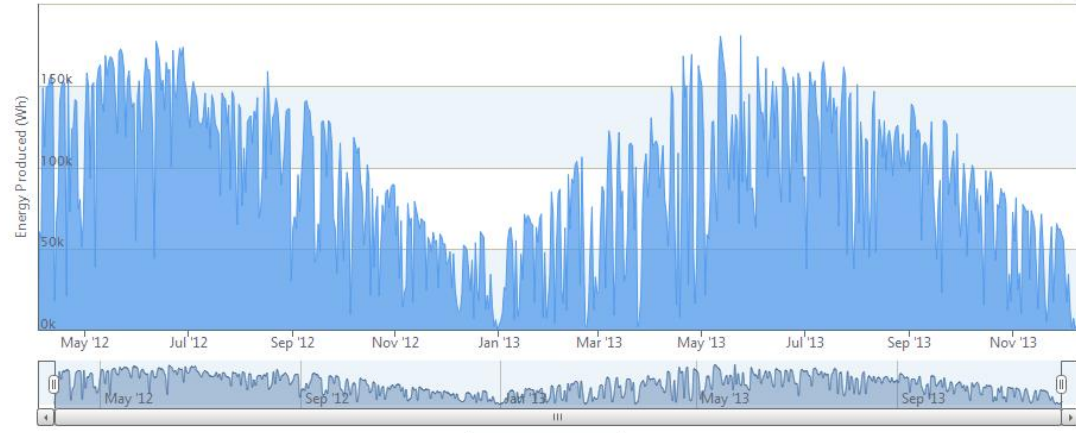
Total Energy  
**56.6 MWh**

Busch Stadium - Home of the 2011 World Champion St Louis Cardinals Full System



View Graph Reports Devices Events

Energy: Lifetime Apr 3, 2012 - Dec 10, 2013



Maximum Produced  
181 kWh

Total Energy  
56.6 MWh

110 Microinverters  
St Louis, MO  
27°F

System Normal

Full System

Energy Status

Today  
**11.6 kWh**  
Peak Power: 2.17 kW at 1:10 PM  
Latest Power: 1 W at 4:45 PM

Past 7 Days  
**74.0 kWh**

Month To Date  
**183 kWh**

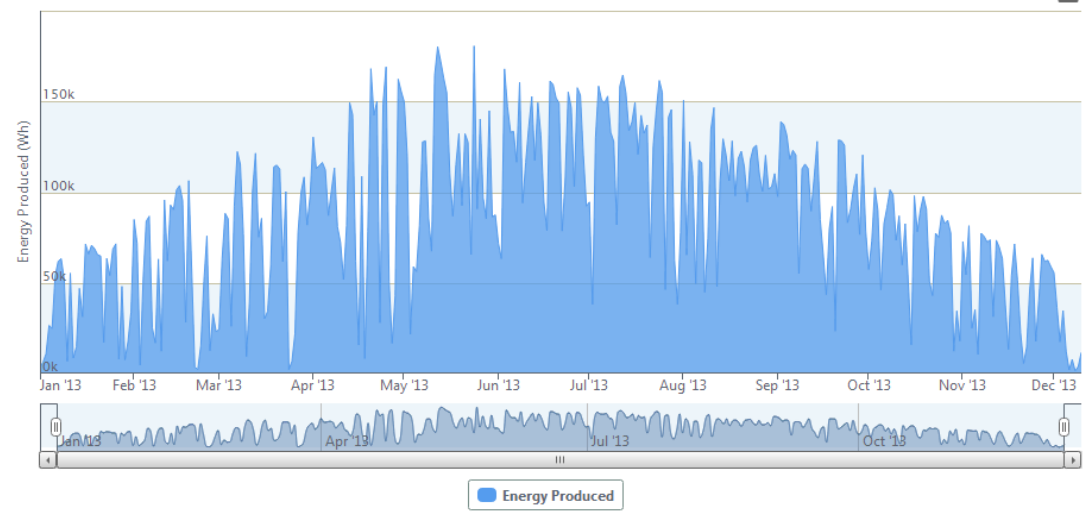
Lifetime  
**56.6 MWh**

**Busch Stadium - Home of the 2011 World Champion St Louis Cardinals** Full System



- View
- Graph
- Reports
- Devices
- Events

Energy: Year to Date Jan 1, 2013 - Dec 10, 2013



Maximum Produced **181 kWh**  
 Total Energy **29.4 MWh**

110 Microinverters  
 St Louis, MO 21°F  
 System Normal

**Full System**

Energy Status

**Today**  
**11.6 kWh**  
 Peak Power: 2.17 kW at 1:10 PM  
 Latest Power: 1 W at 4:45 PM

**Past 7 Days**  
**74.0 kWh**

**Month To Date**  
**183 kWh**

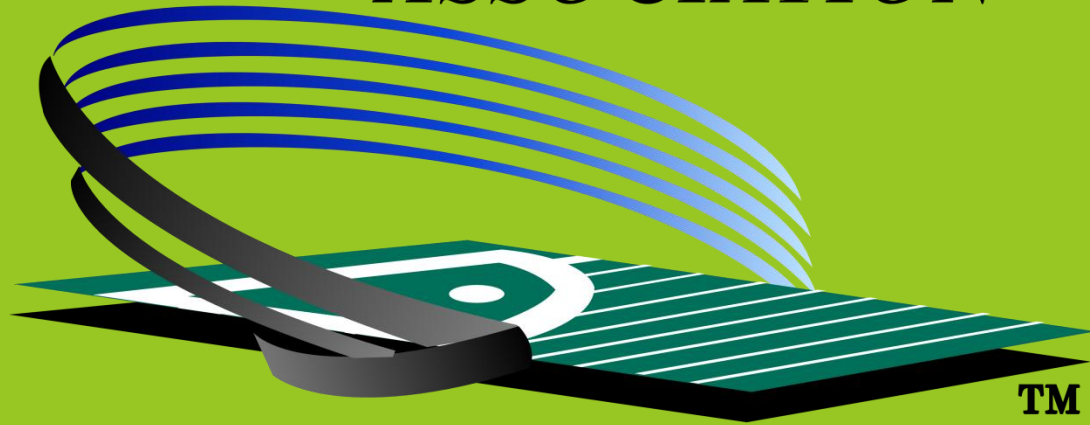
**Lifetime**  
**56.6 MWh**

Feedback





*STADIUM  
MANAGERS  
ASSOCIATION*



**GREEN POWER PARTNERSHIP**

**A  
GREENER  
4  
GAME**



 EPA

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POWER  
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