



# Solar Site Assessment: Galloway Municipal Complex

300 E. Jimmie Leeds Road, Galloway, NJ

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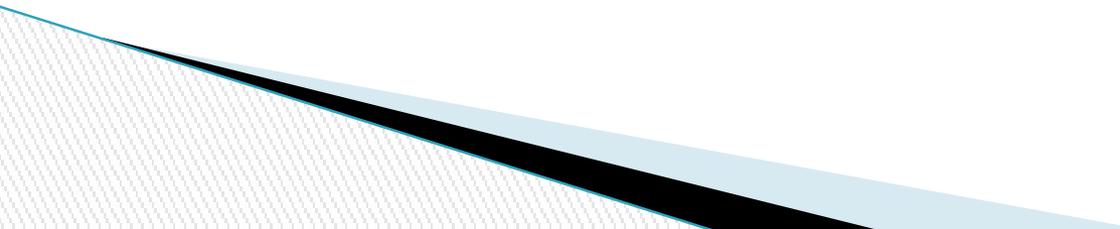
The Richard Stockton College of New Jersey  
Sustainability Program

# Goal and Scope

- ▶ To evaluate the parking lots to determine the feasibility of a potential solar arrays on site
- ▶ To determine the most effective parking lot design for maximum solar production
- ▶ To determine potential annual savings assuming that the project is financed through a power-purchase agreement



# Power Purchase Agreement Structure

- ▶ Long-term legal agreement between solar provider and municipality
  - ▶ Municipality 'leases' land to solar provider
  - ▶ Provider pays to install, own, operate and maintain solar array
  - ▶ Municipality benefits from a reduced, fixed electricity rate for lifetime of agreement
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# Power Purchase Agreement Structure

- ▶ Typically 6-25 year contract
- ▶ Solar Renewable Energy Credits up for negotiation, but typically obtained by provider
- ▶ At the end of the contract:
  - Provider removes panels
  - Municipality may purchase panels
  - Municipality may extend PPA

# Examples of PPA's in New Jersey

## ▶ Middlesex County Complex

- 6.371 MW total array production
- **\$1 million** in expected annual savings



## ▶ Aberdeen Municipal Building

- 5.57 MW total array production
- **\$1 million** in expected annual savings



# Examples of PPA's in New Jersey

## ▶ Richard Stockton College

- Two PPA's (2.2 MW total array production)
- **40% reduction** in electricity rate annually



## ▶ Atlantic Cape Community College

- 2.2 MW total array production
- **\$2 million** in expected annual savings



# Main Lot Solar Array

- ▶ Three parking lot orientations and two array types were considered:

## 1. Current Parking Lot Orientation

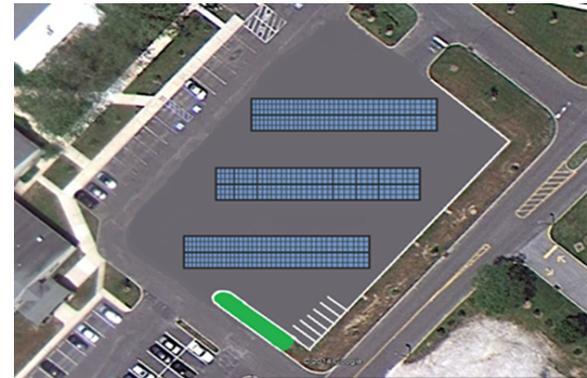
- a.) With single angle arrays
- b.) With double angle arrays

## 2. 90 Degree Orientation Shift

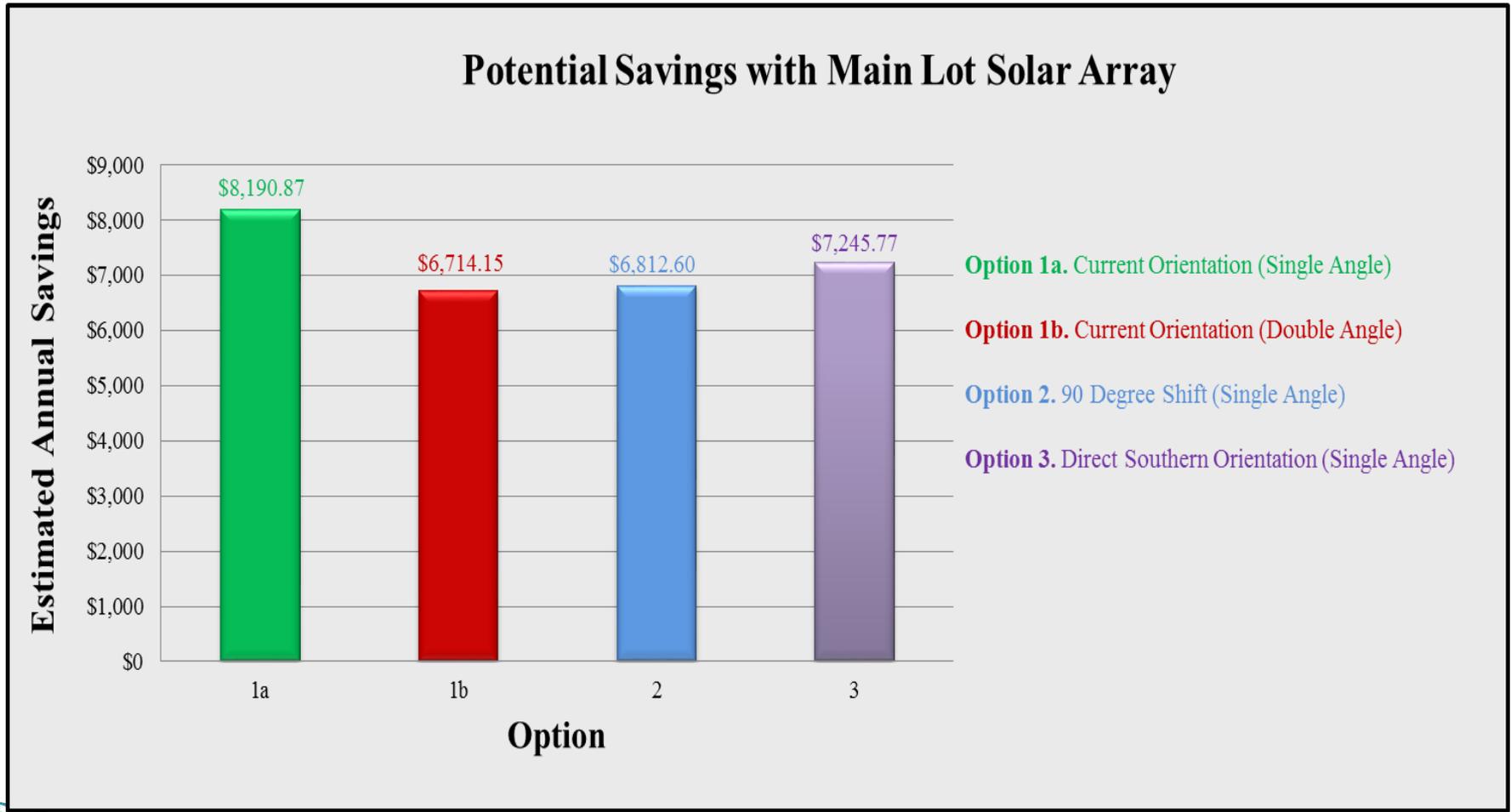
With single angle arrays

## 3. Direct South Orientation Shift

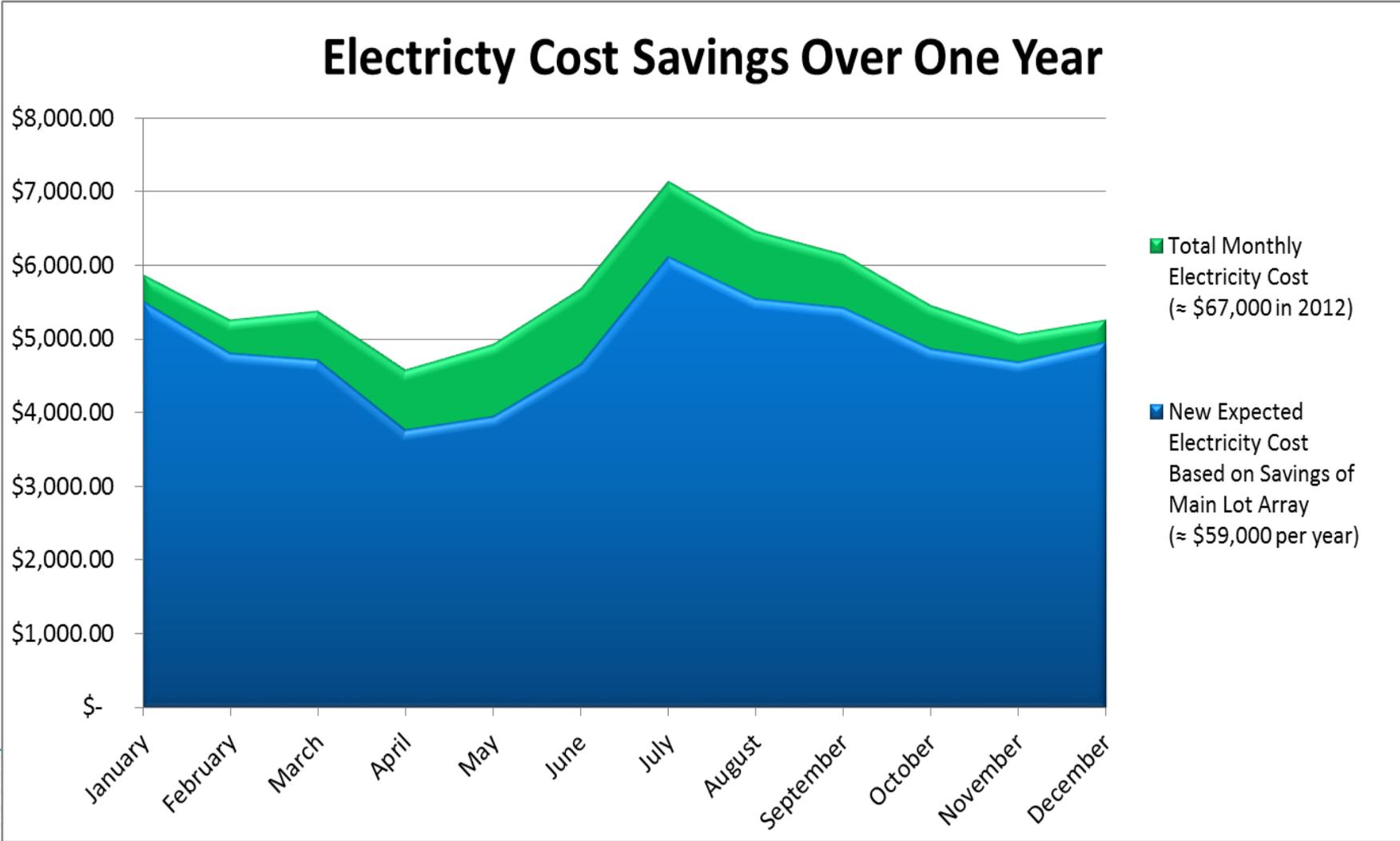
With single angle arrays



# Potential Savings with Main Lot Solar Array



# Potential Savings with Main Lot Solar Array



# Southern Side Lot

- ▶ Only one parking lot orientation and array type was considered due to space limitations:
  1. Current Parking Lot Orientation  
With single angle arrays



# Northern Side Lot

- ▶ Only one parking lot orientation and array type was considered due to space limitations - Tree removal considered:

1. Current Parking Lot Orientation

- With single angle arrays

- Without tree removal

2. Current Parking Lot Orientation

- With single angle arrays

- With tree removal



# Maximum Possible Production Scenario of Carport Arrays

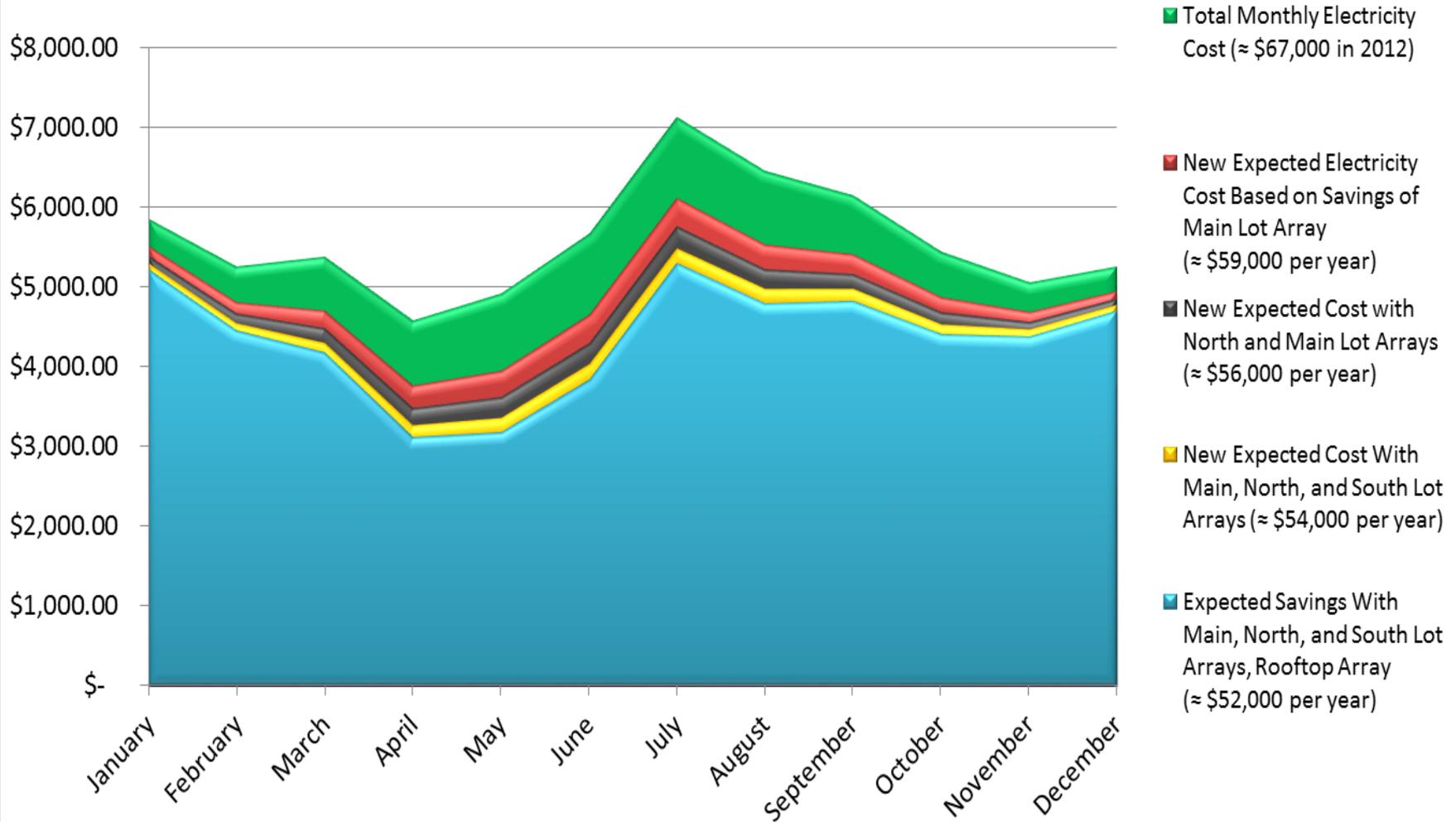
- ▶ Main Lot Option 1a.  
Current Orientation with Single Angle Arrays
- ▶ Southern Side Lot Option 1.  
Current Orientation with Single Angle Arrays
- ▶ Northern Side Lot Option 2.  
Current Orientation with Single Angle Arrays and Tree Removal

<i>Production Capacity</i>	337 kW
<i>Estimated Annual Electricity Production from Solar</i>	350,785 kWh
<i>Percentage of Total Electricity Demand Met by Solar</i>	67.7%
<i>Annual Savings</i>	\$ 13,329.85
<i>15-Year Savings</i>	\$ 199,947.75

# Rooftop Solar Array

- ▶ Courtroom roof considered for additional solar
  - Adds an additional 140 panels
  - Extra \$1,100 in estimated annual savings

# Electricity Cost Savings Over One Year



# Conclusion

- ▶ Assuming PPA similar to the ones negotiated at RSC
- ▶ Municipality's Cost: \$0
- ▶ Solar Annual Production: Over 365 kWh
- ▶ Over 74 % of facilities' annual electricity demand met
- ▶ Over \$13,000 in savings annually
- ▶ Approximately \$200,000 savings over 15 years

Questions?