



Sustainable Development Policy Update

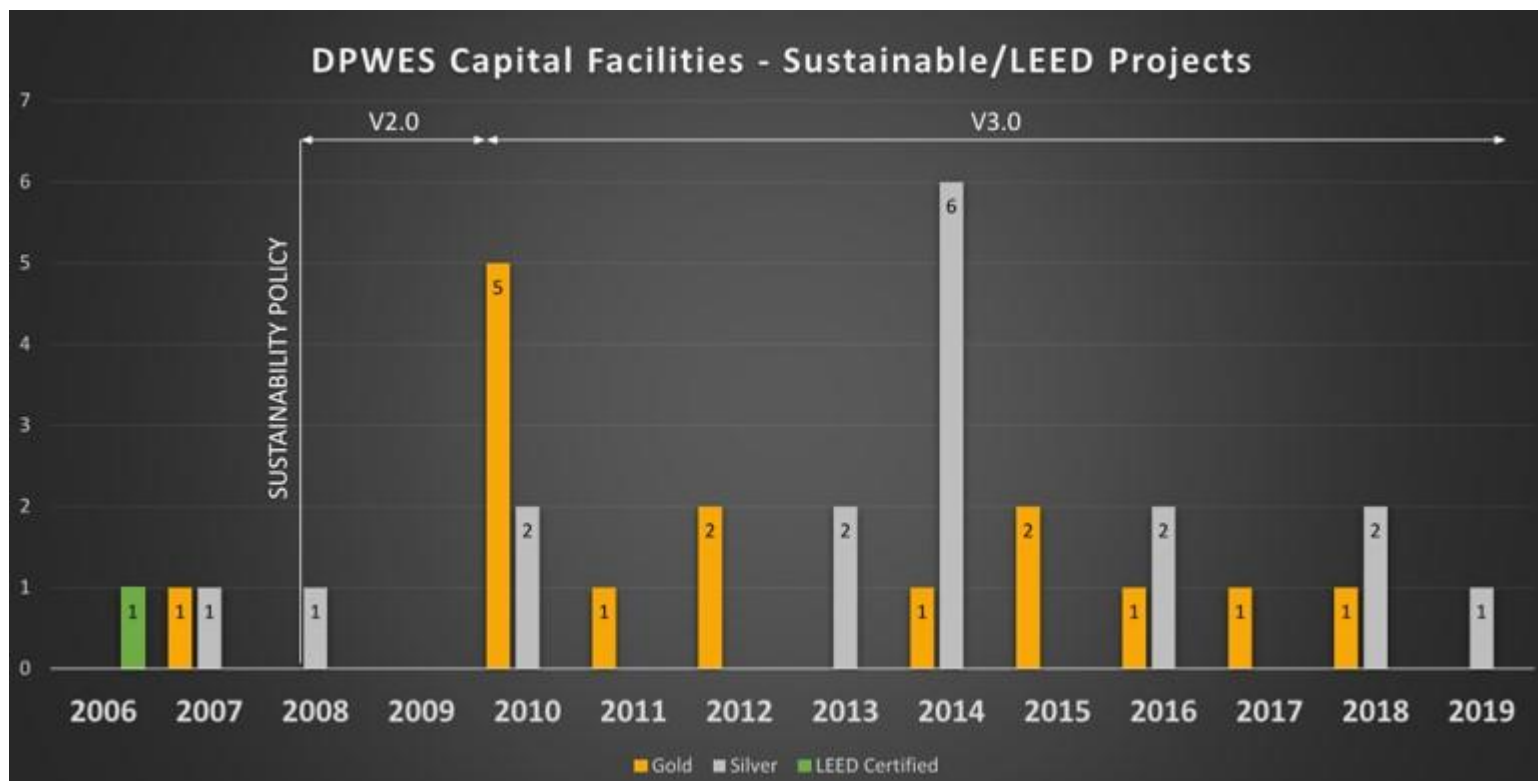
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June 16, 2020

- Sustainability Program Overview
- Green Building Policy & Implementation
- Sample Fire Station-Cost and Energy Model
- LEED Holistic Approach
- LEED Holistic Cost Benefit Model
- Post Occupancy Commissioning
- Pathway to Net Zero Energy
- Solar Panel Implementation

BDCD Sustainability Team:
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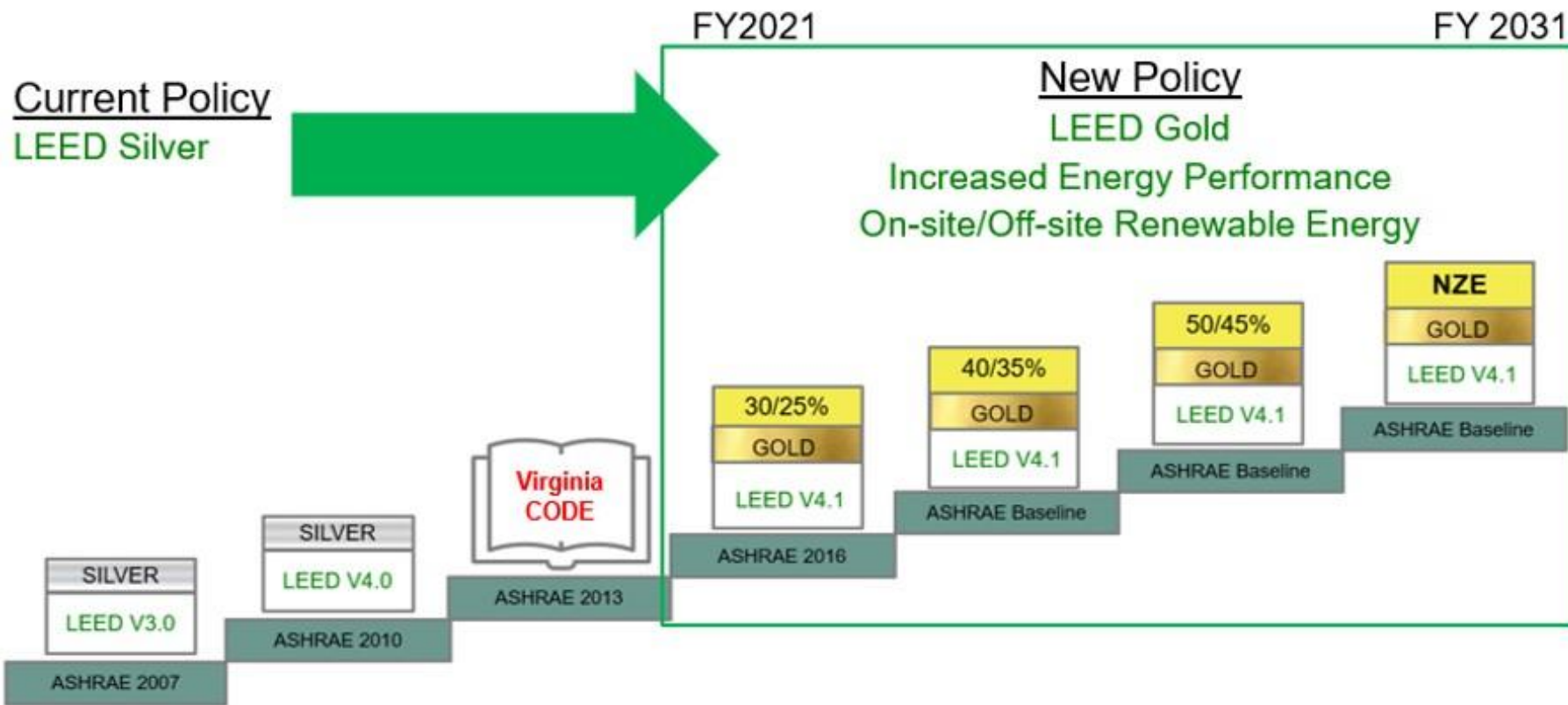
DPWES Sustainability Program Overview – Buildings



LEED Silver achieved = 17 LEED Gold achieved = 15
LEED Certification pending = 1



Green Building Policy & Implementation





Fire Station Cost and Energy Model

| Total Project Estimate (TPE) | | |
|------------------------------|-----------|-------------------|
| Total Bldg. ft ² | | 20,000 |
| Design & Construction Costs | \$ | 15,000,000 |
| LEED v4.0 Gold Premium (6%) | \$ | 900,000 |
| Subtotal Cost | \$ | 15,900,000 |

| Annual Baseline Bldg. Performance | | |
|---|----|------------------|
| Bldg. Avg - kBtu | | 2,400,000 |
| Avg Est. Utility Costs (Gas & Elec) | \$ | 46,400 |
| EUI - 2019 Bldg. Avg - kBtu/ft ² | | 120 |

| Projected Annual Bldg. Performance Improvement | | |
|---|-----------|----------------|
| Energy Reduction Goal (Policy) | | 30% |
| Bldg. Energy Savings (Gas & Elec) - kBtu | | 720,000 |
| New Bldg. Total - kBtu | | 1,680,000 |
| Utility Costs Savings (Gas & Elec) | \$ | 13,920 |
| New Total Utility Costs (Gas & Elec) | \$ | 32,480 |
| EUI - Projected Bldg. - kBtu/ft ² | | 84 |
| Annual Carbon Reduction: CO₂e - Metric Tons | | 150 |
| Annual Vehicles Off the Road | | 33 |

| Solar PV | |
|---|----------------|
| Annual Solar Energy Savings - kBtu | 242,194 |
| Utility Costs Savings (Elec) \$ | 6,034 |
| EUI - Bldg kBtu/ft ² (30% + Solar) | 72 |
| Annual Carbon Reduction: CO₂e - Metric Tons | 51 |
| Annual Vehicles Off the Road | 11 |

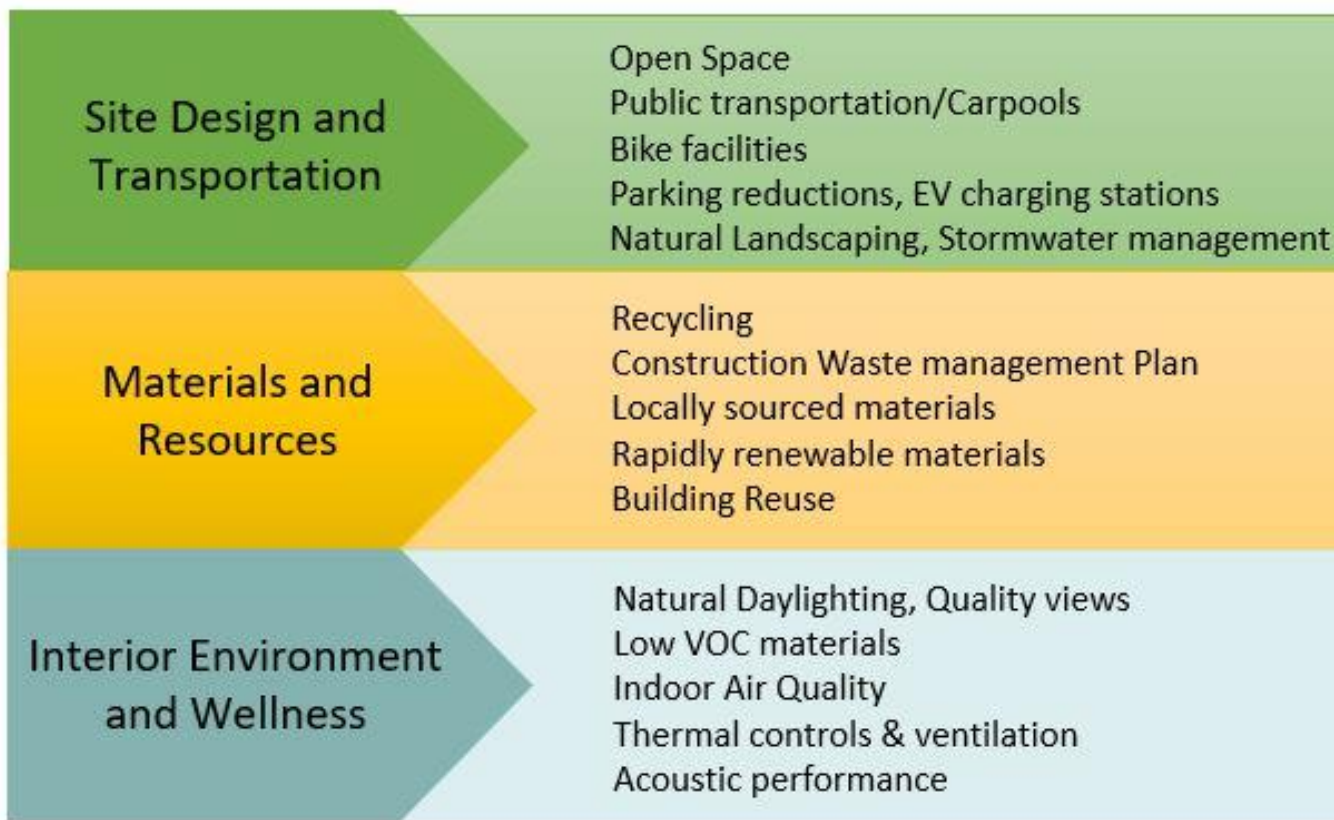
Notes:

1. Basis of Design: 56kW PV performance model by Sigora
2. Metric tons per year is based on a Passenger Car, 22MPG at 11,500 Miles/Yr.
3. Metric Tons Calculator: www.epa.gov/energy/greenhouse-gas-equivalencies-calculator





LEED Holistic Approach





LEED Holistic Cost Benefits Model

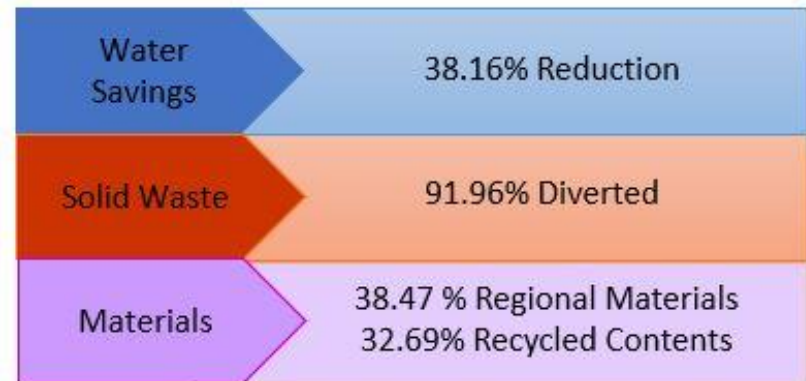
Case Study: Baileys Fire Station

- LEED Version 3.0, Silver
- 16,500 SF Facility

Triple Bottom Line - Autocase Results

- LEED v3.0 Premium: 3%
- ROI : 4.5 years

<https://autocase.com/>



Occupancy Survey from LEED projects:

"I used to leave the office with a headache every day from the overhead noise from the heater/AC unit. Now I don't!!! I am much healthier here."

"Modern/architectural features; layout of workspaces; lots of natural light."

"It is so nice to be able to drink the water, and have comfortable temperatures in a clean, bright building."

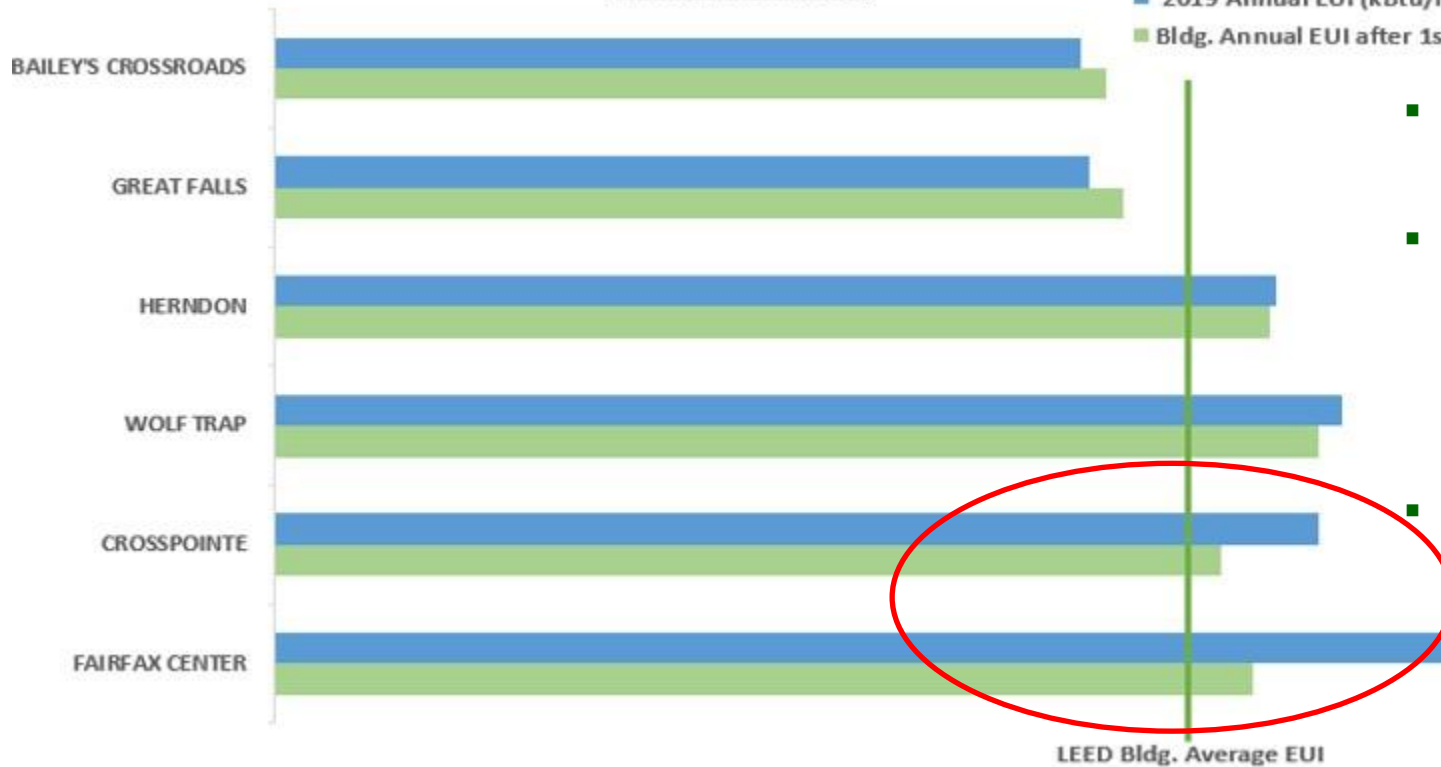


Post Occupancy Commissioning

Life cycle commitment to sustainability starts at the occupancy of a new building

LEED Fire Stations EUI

■ 2019 Annual EUI (kBtu/ft²)
■ Bldg. Annual EUI after 1st Year of Cx

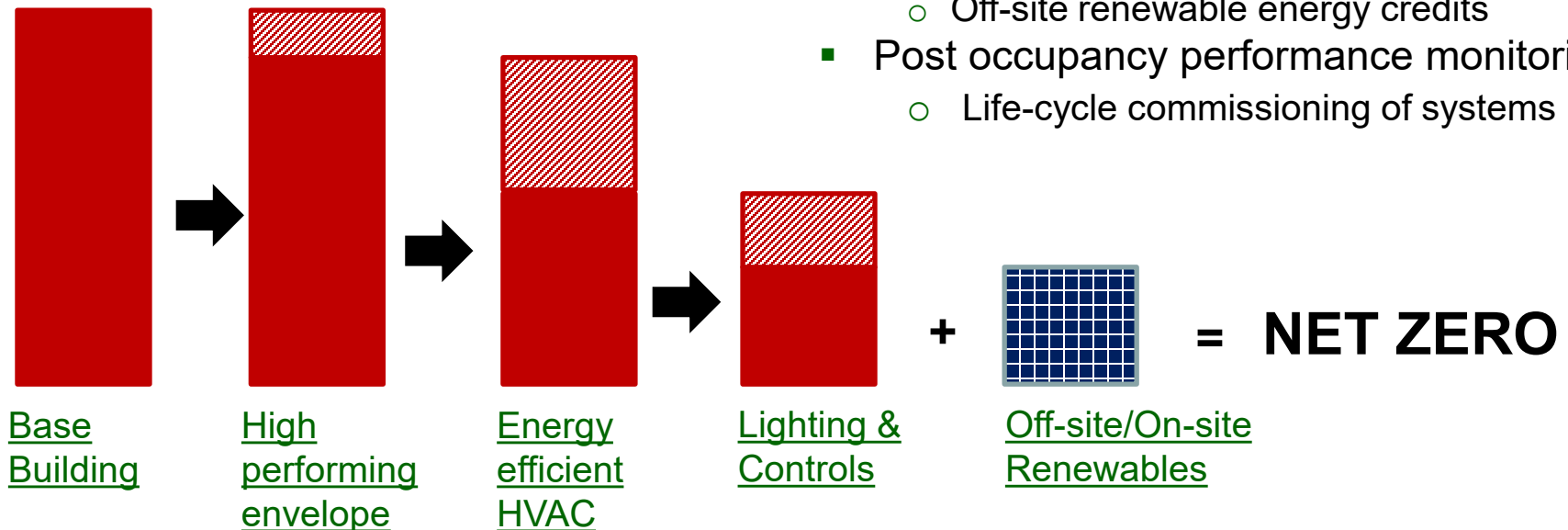


- Facility functional operations review
- Metering and annual performance analysis to assure optimum performance of building systems
- Track EUI (kBtu/ft²) and CO₂ reduction goals



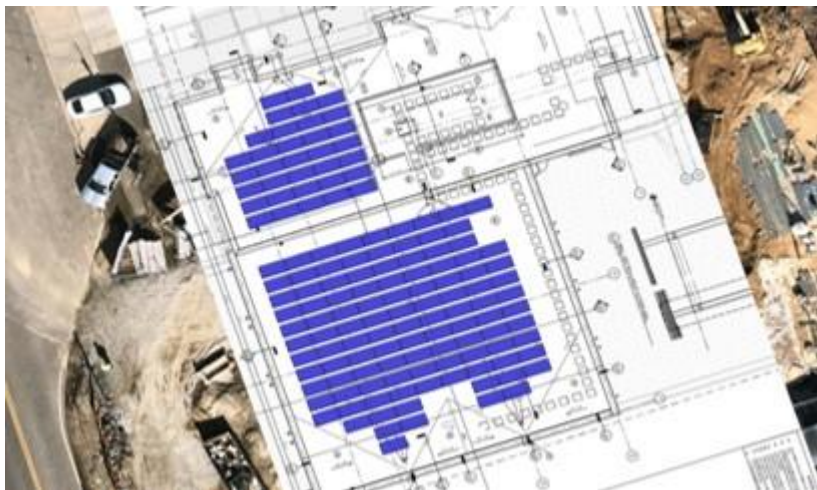
Pathway to Netzero Energy

- High performance building envelope
 - Insulation with higher R values
 - Glass with low solar heat gain
 - Envelope Commissioning
- Energy efficient systems
 - High efficiency HVAC systems
 - Natural ventilation or passive system
 - LED lighting and lighting controls
 - Plug load efficiency
- Renewable energy – Solar PV panels
 - On-site solar
 - Off-site renewable energy credits
- Post occupancy performance monitoring
 - Life-cycle commissioning of systems





Solar Panel Projects



Woodlawn Fire Station Solar Panel Study



Sully Community Center



Monument Garage