

*Plainfield Park District*

# **PRAIRIE ACTIVITY & RECREATION CENTER (PARC)**

## **September 2024**



# Net Zero

Net  
Zero

How PARC  
Operates

Annual  
Overview

Monthly  
HVAC

Monthly  
Lighting

Monthly  
Plug Load

Monthly PV

Monthly  
Net Totals

## Net Zero Energy

The PARC has been designed as a Net-Zero Energy building, incorporating the latest energy-efficient construction materials and an 18,000-sf series of solar roof panels which will generate enough energy to offset the building's utilities. It was the first Net Zero Energy park district designed building in Illinois.

### 1 Harvest energy onsite



*662 solar panels – 542 on the roof, 68 on the parking lot canopy, and 52 on the solar awning* – capturing clean, renewable energy that is converted to 391,972 kWh of energy per year.



*Energy-producing treadmills* that turn up to 74% of user-generated energy into clean, renewable energy.

### 2 Maximize energy efficiency through a high-performance building envelope



*Airtight insulation* with R-values R-28.25 to R-60 – the higher the R-value, the higher the insulating effectiveness.



*Triple pane windows* to keep the heat in on cold days and out on hot days.

### 3 Conserve energy inside with mechanicals and devices



*High-efficiency VRF HVAC System* that heats and cools only the spaces that need it.



*LED lighting* throughout the building that uses 75% less energy and lasts up to 25x longer than incandescent lighting.



*Daylight and occupancy sensors* that provide only the amount of artificial light needed for each space.



*Power sensors* that eliminate "phantom loads" by cutting off the flow of electricity to appliances, equipment, etc. not in use.

The Plainfield Park District received a grant of \$1.0 million from the [Illinois](#) Clean Energy Community Foundation to help make PARC a Net Zero facility.

# How PARC Operates

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**1**

The windows in this building are special! They're small, so they let light in, but not too much when it's hot outside. They're also "coated" to protect the interior of the building from the heat of the sun.

**2** Using "used air" to pre-treat outside air saves energy!

Used air leaving the building (red arrow pointing up)

Fresh air being drawn into the building (We need fresh air to be healthy!) (blue arrow pointing down)

Heat Exchanger

Preheated fresh air entering the building (pink arrow pointing down)

Used air leaving the building (red arrow pointing up)

**3** A lifetime of energy savings...

1 LED Light Bulb lasts 25 years!

2½ CFL Light Bulbs

25 Incandescent Light Bulbs

**4**

Extra insulation in the walls and on the roof is like putting a blanket around the building...

The roof has 10" of insulation!

...keeping it warmer in the winter and cooler in the summer.

# Annual Overview

Net Zero

How PARC Operates

Annual Overview

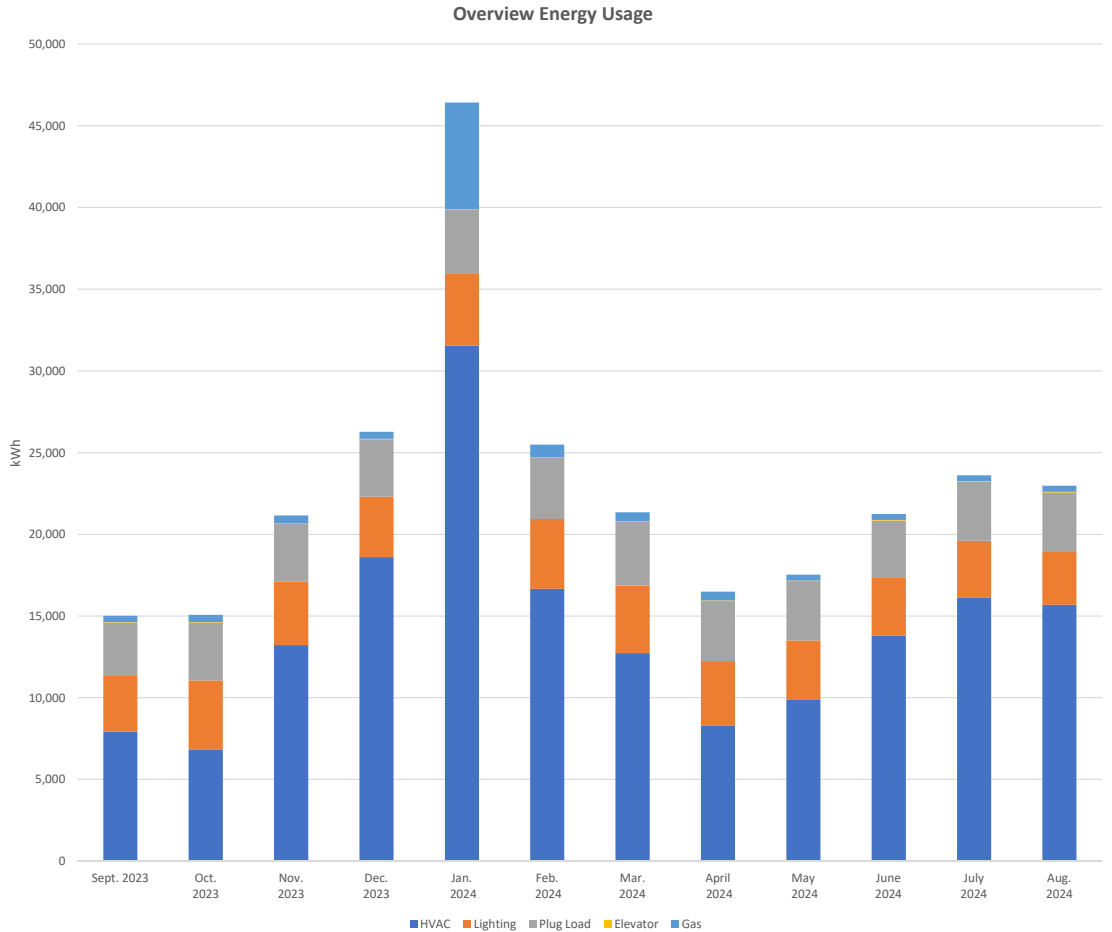
Monthly HVAC

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# Monthly HVAC

Net Zero

How PARC Operates

Annual Overview

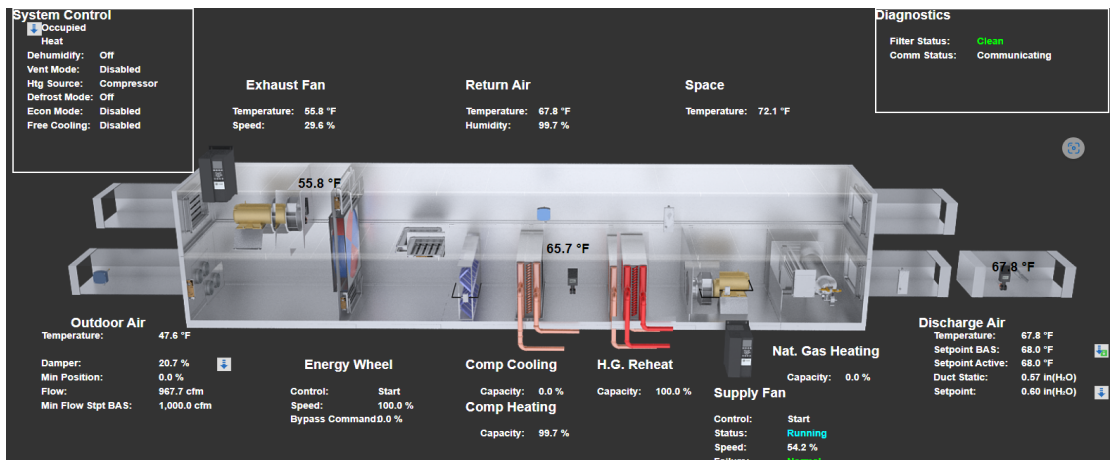
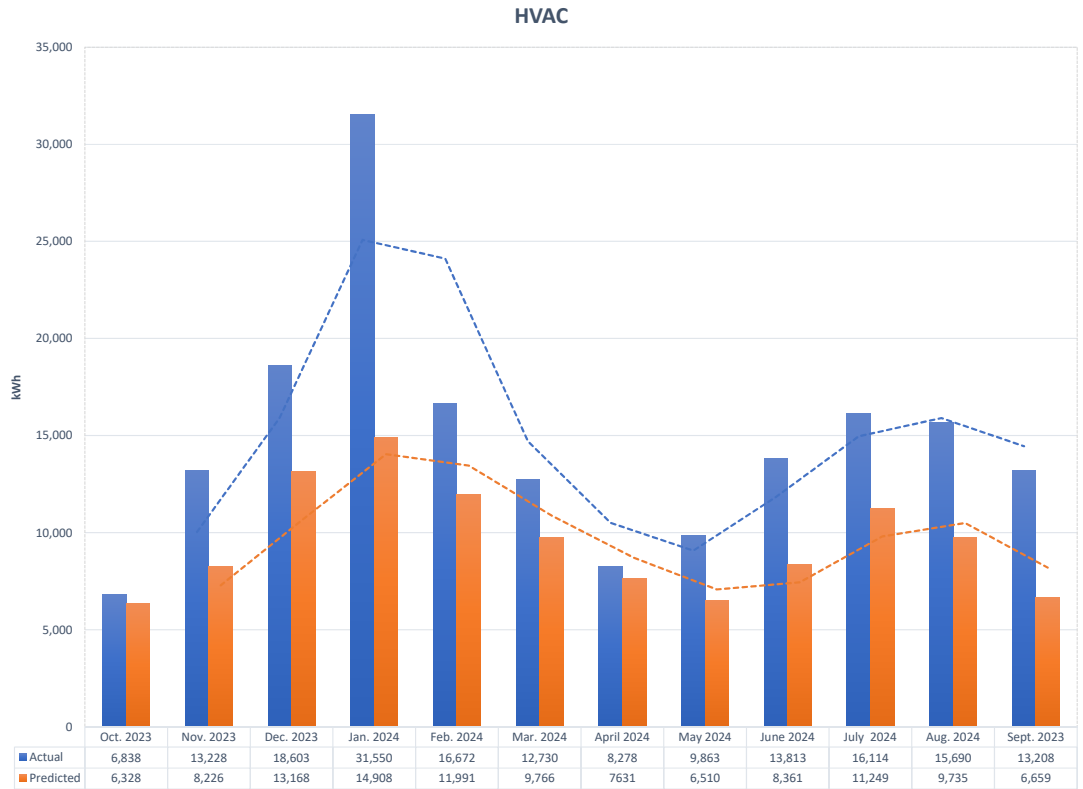
Monthly HVAC

Monthly Lighting

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\*HVAC = Heating, Ventilation and air conditioning

# Monthly Lighting

Net Zero

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Annual Overview

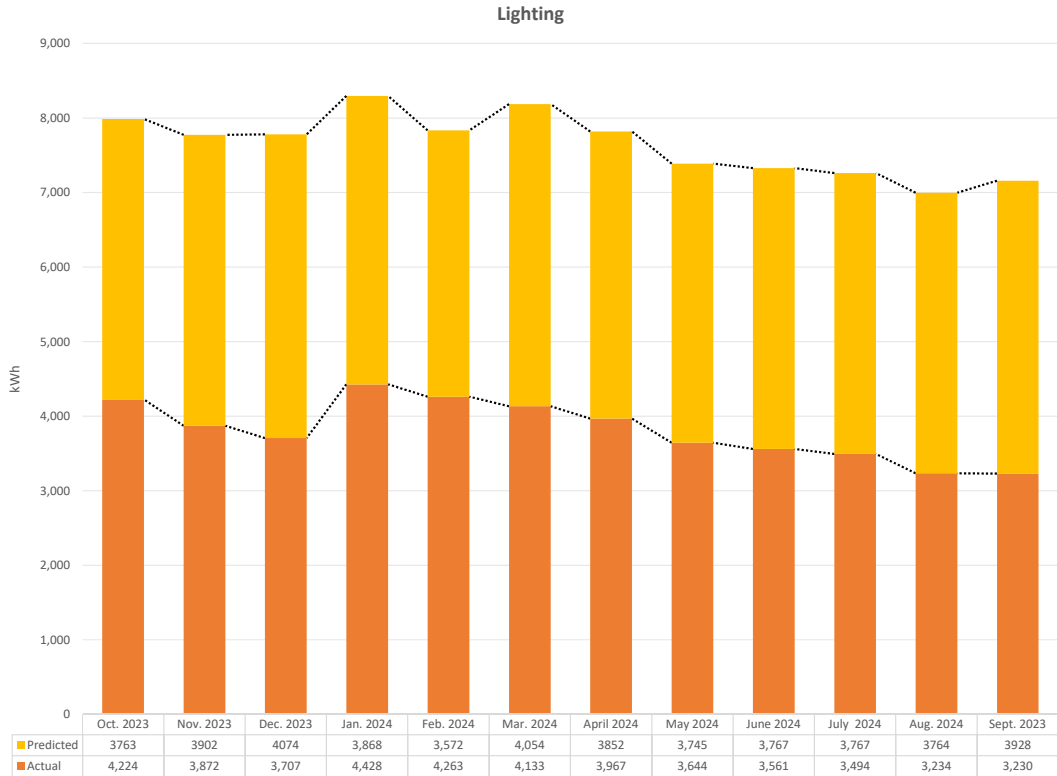
Monthly HVAC

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# Monthly Plug Load

Net Zero

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Annual Overview

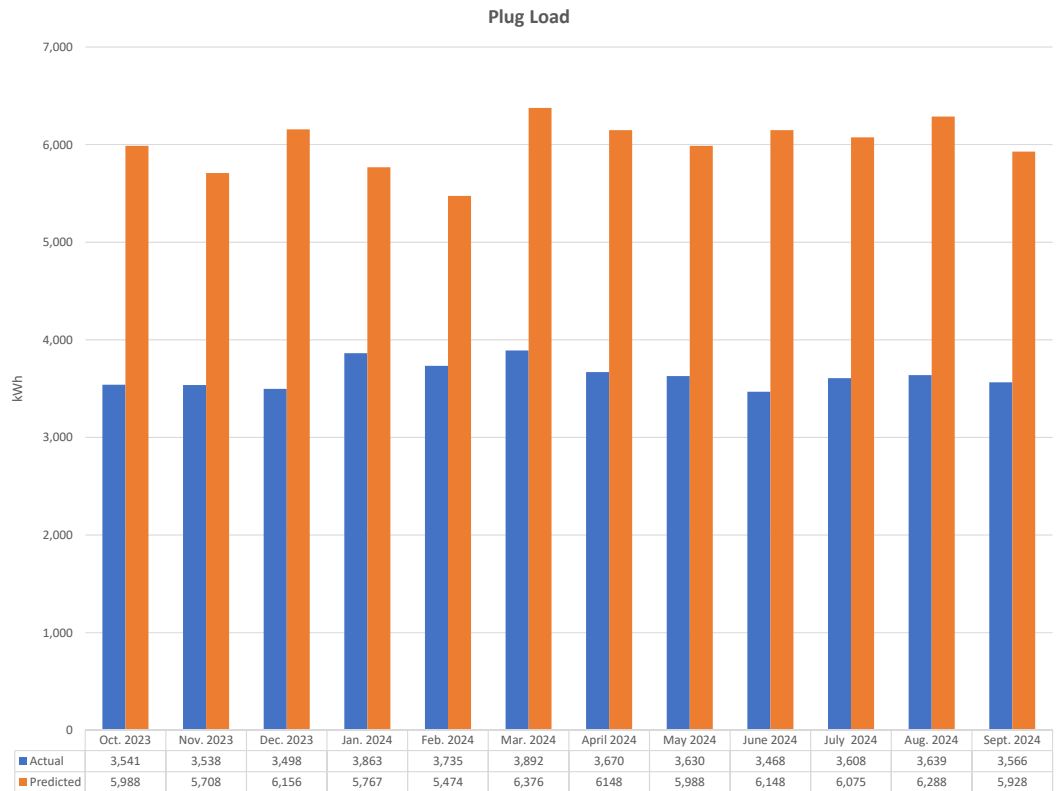
Monthly HVAC

Monthly Lighting

Monthly Plug Load

Monthly PV

Monthly Net Totals



# Monthly PV Production

Net Zero

How PARC Operates

Annual Overview

Monthly HVAC

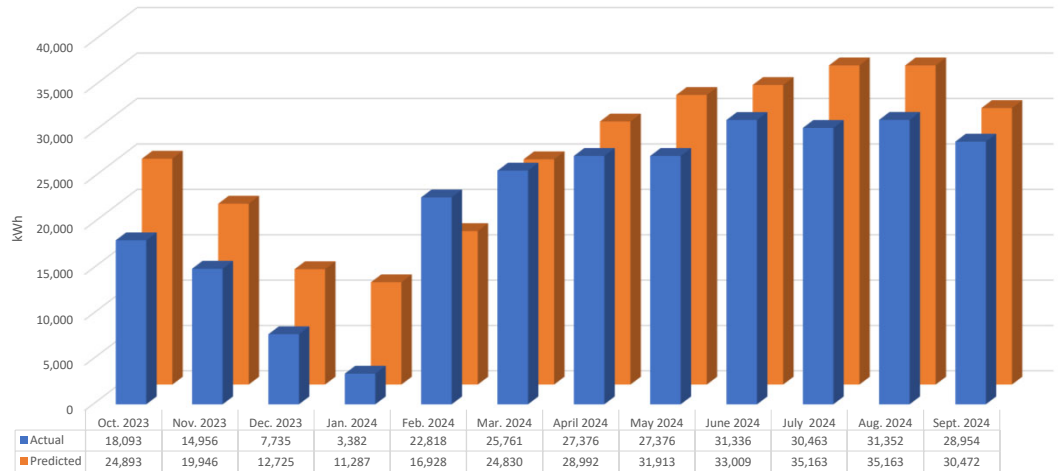
Monthly Lighting

Monthly Plug Load

Monthly PV

Monthly Net Totals

PV Production



\*PV=Photovoltaics, generating electricity using solar power



# Monthly Net Totals

Net Zero

How PARC Operates

Annual Overview

Monthly HVAC

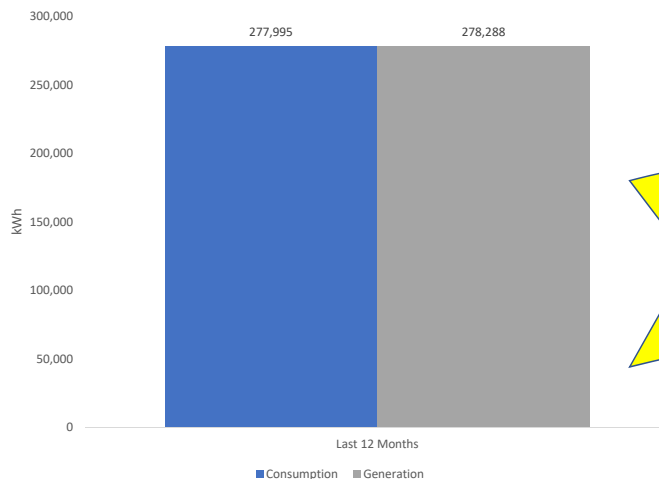
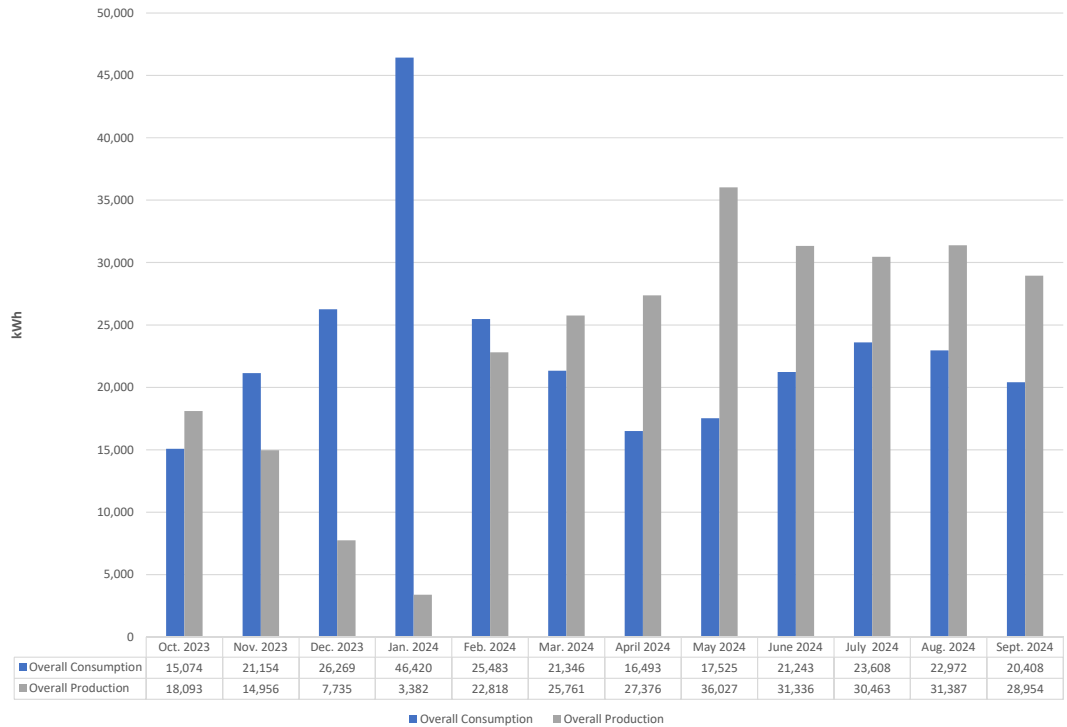
Monthly Lighting

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Production vs Generation



**Current Status**  
**-293 kWh**