



# GREEN WORKS ORLANDO







**100+**  
lakes



**100+**  
parks



**21**  
community  
centers

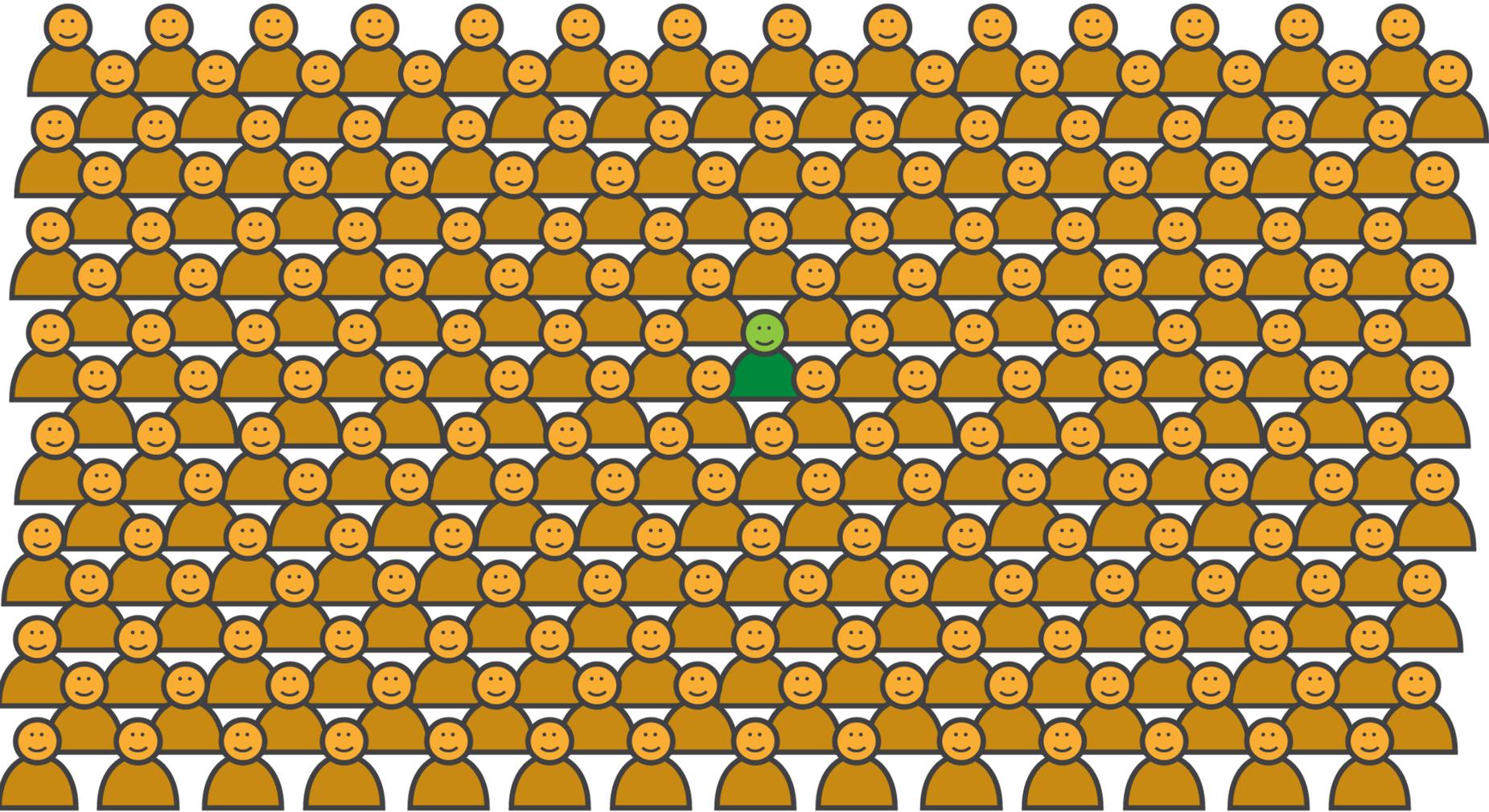


**277,173**  
residents



# Population Vs Visitors

1 Resident to 245 Tourists





# GREEN WORKS ORLANDO





# Sustainability Action Plan Update

- Community-based goal setting
- Developed KPI's to measure success
  - 90% reduction of GHG emissions
  - 100% RE for municipal and city-wide
  - 25% reduction for energy use intensity (EUI)



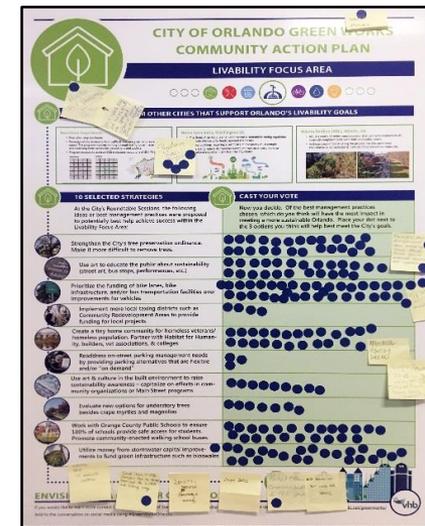
- **Themes:**
  - Social Equity
  - Climate Resiliency
  - Technology (Smart Cities)
- Compatibility with United Nations Sustainable Development Goals





# CSAP Outreach to Date (Fall 2017- Present)

- 3 Mayor's Task Force Meetings
- 7 Roundtable Meetings with subject matter experts
- 3 Community Workshops
- 2 Online surveys
- **Hundreds of ideas generated and considered**





FOCUS AREA:  
**ENERGY AND GREEN BUILDINGS**



# Energy & Green Building Strategic Goals



- 90% Reduction of GHG Emissions compared to 2007
- 20% Reduction of Municipal Energy Use Intensity by 2021
- 100% LEED Silver municipal buildings (new construction)
- 100% Renewable Electricity
  - 2030 – Municipal Operations
  - 2050 – City-wide





# UNDER 2



## SECRETARIAT THE °CLIMATE GROUP







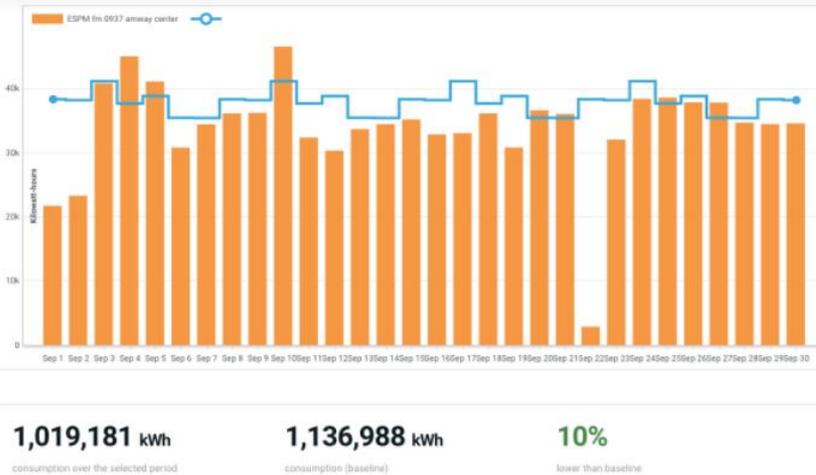
# Municipal Energy Efficiency

- LEED Silver req. for all new city-owned buildings
  - Built 15 new LEED certified buildings since 2010
  - New Buildings: Wetlands Education Center, Fire stations (3), Records Building
- **\$17.5 million municipal EE bond**
  - Retrofitting 55 Buildings (of 550)
  - **18% savings since 2011 baseline**
  - **\$1.6 Million annual savings to date**
    - Pay down bond debt
    - Fund future EE investments





# Municipal Energy Efficiency cont.



## 10% Energy Savings Realized in the First Month

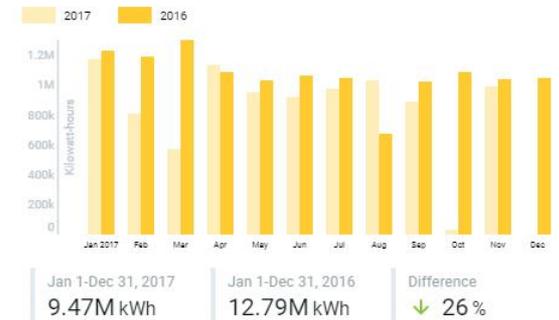
Using historical electricity trends at the Amway Center, a weather normalized pre-LED lighting retrofit baseline was created. This graph shows the electricity use for the first month after the LED retrofit was completed compared to that baseline.



## Persisting Savings

12+ months after the completion of the LED retrofit, the electricity savings are persisting. In that first year, 11% electricity savings - or 3,577,740 kWh have been realized. That is enough energy to power the average household for over 332 years!

## Year-over-Year Total Electricity Use / 2017 compared to 2016



**Amway Center's Electricity Use Post LED Retrofit**  
Last 12 months

# Smart Street lighting

- **GOAL:** 100% LED streetlight by 2020
- OUC working to retrofit 25,000+ streetlights to LED
  - 18,000 currently retrofitted
- Exploring test of new “Smart Streetlights” in Downtown
  - LED technology
  - Video surveillance
  - Environmental monitoring
  - Traffic analytics
  - Wi-fi / DAS systems
  - Gun shot detection





“I am proud to support a vision of transitioning entirely to 100 percent clean and renewable energy in our City.”

—MAYOR BUDDY DYER of Orlando, Florida

**Over 5.8 MW of Solar PV installed and/or purchased  
on City buildings, 10 MW+ in the pipeline**





# SolSmart GOLD designation



- U.S. DOE recognition program to help local governments reduce “soft-cost” barriers to solar energy growth.
- Solutions Implemented:
  - Solar Contractor Permit Training
  - Solar Permitting Guide
  - Planning / Permitting staff training
  - LDC definition of “Solar equipment”
  - Waive solar permit fees for small-scale solar projects





# Exploring On-site Solar PV

- Net-zero Records Building
- City Hall Solar R&D Platform
- 2+ MW of rooftop PV on City community centers, fire stations, OPD Headquarters, and more.
- 4 MW brownfield community solar farm
- 4MW+ solar farm at Iron Bridge WWTP





# NREL Solar PV Training for Cities & Communities

- Selected as 1-of-50 cities to train City/Utility staff on Solar PV deployment and operations/maintenance
- Training will include:
  - Framing your goals and team:
  - Site Identification and Screening
  - Project Validation and Permitting
  - Project Economics and Financing
  - PV RFPs





# Community Solar + Collective Solar Programs

- **20+ MW OUCommunity Solar:** offsets consumption through virtual net metering



- **OUCollective Solar** makes it easier for homeowners to put Solar Photovoltaic (PV) panels on their roofs.
  - OUC purchases the panels in bulk to achieve economies of scale, which makes solar more affordable for our customers





## 5.2 Megawatt solar energy procurement

- Orlando  
City Hall
- Orlando  
Police HQ
- 17 Fire  
stations

Prevention of  
**5,912,000**  
pounds of coal from  
being burned

Reduction of  
**12,216,000**  
pounds of CO<sub>2</sub> emissions



# NREL Solar Energy Innovation Network (SEIN)

- \$169,000 direct funding
- Selected as 1 of 9 cities nationwide for NREL SEIN
- Orlando team: City, FSEC, OUC
- Develop roadmap to 100% RE goals
  - Solar capacity projection
  - Load forecasting models
  - Network upgrades
  - Financing models
- Develop 'Solar Ready' design guidelines for new construction





# Exploring Floatovoltaics...

- Testing floating solar arrays on Lakes and Retention Ponds
- 35 KW grid-tied system
- Performing research with UCF Biology to understand habitat and water body impacts





**2017 results:**  
- \$1.5 million allocated  
- 78 projects  
- 4 PACE providers

## HOW CAN ORLANDO'S PACE PROGRAM



## PACE PROGRAM

**HELP IMPROVE  
YOUR HOME  
AND BUSINESS?**





# GREEN WORKS ORLANDO

