Smart ORL
The future of urban sustainability

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CITY OF ORLANDO

City of Orlando Proper population: 277,173
Total visitors to Orlando in 2016: 68,000,000+
Travelers passed through Orlando International Airport in 2016: 43,120,808
Population Vs Visitors

1 Resident to 245 Tourists
“Our vision is to become the most environmentally friendly, socially inclusive, technology-enabled, and economically vibrant city in the Southeast...we strive to be one of the most sustainable and resilient cities in the U.S.”

– Mayor Buddy Dyer, City of Orlando
Easter morning 1900: 5th Ave, New York City. Spot the automobile.

Source: US National Archives.
Easter morning 1913: 5th Ave, New York City. Spot the horse.

Disruption can happen very fast...

Source: George Grantham Bain Collection.
Governments are beginning to question what the future of our cities will look like in 10, 15, or 20 years...
All over the world, cities are **transforming**
<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>1.7B</td>
</tr>
<tr>
<td>1950</td>
<td>3.5B</td>
</tr>
<tr>
<td>Today</td>
<td>7.5B</td>
</tr>
<tr>
<td>2050</td>
<td>9.7B</td>
</tr>
</tbody>
</table>
Needed for 2050

- Water: +55%
- Food: +60%
- Energy: +80%
What is a “Smart & Sustainable City”? A city that uses information and communications technology (ICT) to enhance its livability, workability, sustainability and resilience.

Uses technology to make critical infrastructure and services more intelligent, interconnected, and efficient.
Convergence: 3 key technologies

- Sensors
- Communications
- Computation
4 aspects of a smart city

1. Collect
2. Communicate
3. Compute
4. Control
3 key benefits

LIVABILITY
- Clean
- Safe
- Healthy
- Vibrant
- Mobility

WORKABILITY
- Competitive
- Connected
- Digital
- Jobs
- Prosperous

SUSTAINABILITY
- Renewables
- Resilient
- Regenerative
- Carbon Neutral
- Water
Benefits of smart, sustainable communities

- Jobs: 30%
- Energy Savings: 50%
- Water Consumption: 30%
- Crime Rates: 30%
- Traffic: 30%

Education: $3/Student/Month
Healthcare: $3/Doctor Visit

Livability, Workability, Sustainability
WELCOME TO SMART CITIES
ORLANDO

CITY OF ORLANDO
2017 Smart Cities Council Readiness Challenge WINNER!

• 1 of 5 cities nation-wide
  – Orlando, Miami, Austin, Philadelphia, Indianapolis

• Develop comprehensive ‘smart cities’ roadmap and framework
Smart Public Safety

- OPD Body cameras and audio recorders
- 178 IRIS cameras throughout the City to improve public safety
- Emergency signal priority for Traffic lights
- Computer Aided Dispatch (CAD) to improve response time
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**HOW IT WORKS**

1. Opticom™ IR emitter sends a secure, encoded priority request to the intersection.
2. Opticom™ detector receives IR signal and relays the request to Opticom™ phase selector.
3. Opticom™ Multimode phase selector validates request from IR detector or GPS receiver, and alerts the traffic control system which requests a green traffic signal.
4. As vehicle enters radio range, Opticom™ GPS intersection equipment relays the request to Opticom™ phase selector.
5. Opticom™ GPS vehicle equipment transmits vehicle speed, direction and turn signal status to GPS intersection equipment.

**Use Central Management Software (CMS) to update system configuration, collect data and generate reports.**
Orlando Open Data

- Increase transparency and facilitate economic development

- Analyze crime data in Orlando Neighborhoods

- Access energy and water use information in buildings (BEWES)
# Food Waste

**Acceptable Items:**
Please see the list below for acceptable food waste, compostable packaging and yard waste.

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Coffee Grounds and Filters/Teabags | - Poso de café y filtros y bolsas de té  
|                                 | - Kafe an poud ak filtre / sache te                                    |
| Pastries                        | - Muffins, bagels, biscuits, donuts                                    |
|                                 | - Reposterías                                                          |
|                                 | - Pommkét, pen, biskwit, donôt                                         |
| Eggshells                       | - Cáscara de huevo                                                     |
|                                 | - Po Ze                                                                 |
| Dry Goods                       | - Flour, sugar, coffee, tea                                            |
|                                 | - Mercancías Cecas Marina, azúcar                                      |
|                                 | - Atik pou kote ki sèk Farin, sik, kafe, te                           |
| Fats, oils and grease           | - Todo tipo de aceites y grasas                                        |
|                                 | - Gwo grès, lwil ak grès                                               |
| Fruit & Vegetable Prep Waste    | - Desperdicio de preparación de comida                                 |
|                                 | - Fatra ki sot nan Fwi & Legim                                        |
| Fruits and Vegetables           | - Frutas y Verduras                                                    |
|                                 | - Fatra ki sot nan Fwi & Legim                                        |
| Grains                          | - Pasta, beans, rice, bread, cereal                                    |
|                                 | - Granos - Pastas, frijoles, pan, cereal                              |
|                                 | - Grenn - Espageti, pwa, diri, pen, sereyal                            |
| Meat and Dairy                  | - Carnes y Productos lacteos                                           |
|                                 | - Vyann ak pwodwi ki gen lét                                          |

**Do Not Include:** Metal, glass, plastic or non-biodegradables.

- Pa mete Metal, vê, plastik ak tout lot bagay ki pa ka dekonpoze.
- No metales, vidrio, plastico y no biodegradables.
Commercial Food Waste Collection Program

More than 2.5 MILLION pounds of Food Waste diverted from the landfill since August 2014
Commercial Food Waste Collection Program
Downtown Recycling

• Expanding recycling and food waste collection in Downtown core.
• Established 10+ recycling bins at Lake Eola
• Establishing 20+ bins, including Big Belly Solar Trash Compactors in Spring 2017
• Exploring mandatory recycling policy for all buildings
FOCUS AREA: ENERGY AND GREEN BUILDINGS
Smart Buildings

- **GOAL:** 100% city-owned buildings are high-performance green buildings

- **LEED Silver req. for city-owned buildings**

- **$17.5 million municipal bond**
  - 55 Buildings (of 550)

- **$2.4 Million annual savings**
  - Fund future EE investments
  - Pay down bond debt
Smart Street lighting

- **GOAL:** 100% LED streetlight by 2020

- OUC working to retrofit 25,000+ streetlights to LED
  - 15,000 currently retrofitted

- Exploring test of new “Smart Streetlights” in Downtown
  - LED technology
  - Video surveillance
  - Environmental monitoring
Smart Energy Generation

○ GOAL: 100% Renewable Energy by 2030 for Municipal Operations, 2050 for City-wide

○ 420 KW solar PV array
○ 11 KW SEE Art Orlando array
○ 30 KW Reliable Plaza array
○ 6 MW Stanton Solar farm
○ 400 KW Gardenia Community Solar Farm
○ 12 MW Stanton Community Solar Farm
Over 500 KW of Solar PV installed on City buildings, 4 MW+ in the pipeline
Exploring On-site Solar PV

- City Hall Solar R&D Platform
- 2+ MW of rooftop PV
- 4 MW brownfield community solar farm
- 4MW+ solar farm at WWTP
Community Solar + Collective Solar Program

- Community Solar offsets consumption through virtual net metering
- Collective 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 CO2 emissions
• 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
FOCUS AREA:
TRANSPORTATION
TravTek: In-vehicle Navigation Systems

Orlando was the pioneer for in-vehicle navigation system R&D
Bike-friendly City

- 30 bike share stations, 300 bikes
- 42 miles of urban trails
- 265 miles of bike lanes; 53 miles of signed routes
- Over 232,000 trips per month on the trail network
- 1 mountain bike park
- 6 bike repair stations
- Bronze Level Bicycle Friendly Community - League of American Bicyclists
- Smart Growth America grant
Smart Vehicles

• GOAL: 100% alternative fuels by 2030
  • EV’s for City Hall motor pool
  • Testing EV buses for LYNX and LYMMO
  • 4 EV Motorcycles for OPD
  • Deploying 150+ EV charging stations around City
US DOT Autonomous Vehicle Proving Grounds WINNER

• 1 of 10 cities nation-wide
• Developed “Central Florida Automated Vehicle Partnership (CFAVP)
• R&D for new vehicle technologies, including electric, connected, and autonomous vehicles
• Focus on all modes of travel
• Regional Economic Development
Central Florida Automated Vehicle Partnership
Lynnmo Electric Bus Pilot
Autonomous Vehicle Mobility Initiative (AVMI)

- RFI submitted to assess current AV market

- Plan to deploy AV shuttle pilot in Fall 2018

- Collaboration with FDOT to deploy DSRC (Dedicated Short-Range Communication) infrastructure in DTO
Smart District:
Creative Village / Downtown UCF / SED