



SEAP
STRATEGIC ENERGY ACTION PLAN
 CITY *of* CHARLOTTE

Budget Workshop, March 4

Cover SEAP policy and investments in the areas of...

1. Energy Generation

- *Green Source Advantage Program*

2. Buildings

- *Energy Efficiency and Solar Readiness*

3. Workforce Development & Equity

- *Green Workforce*

4. Transportation

- *Policies and Light-Duty Fleet*
- *CATS Buses*
- *Aviation*

5. Engagement

- *SEAP Engagement*

GUIDING PRINCIPLES – SEAP WORK

SEAP Goal: By 2030, we will **strive to source 100% of City's energy use in our buildings and fleet from zero carbon sources.**

1. Spend current resources strategically to maximize impact
2. Make investments for the long term (e.g. total cost of ownership)
3. Focus on policy work in addition to actions
4. Use data and available technology to drive investments
5. Focus on alignment and opportunities across departments (including enterprise funds)
6. Seek out grant funded opportunities as well as private sector partnerships to make our \$ go further



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Buildings

Workforce
Development

Employee
Engagement

Energy
Generation

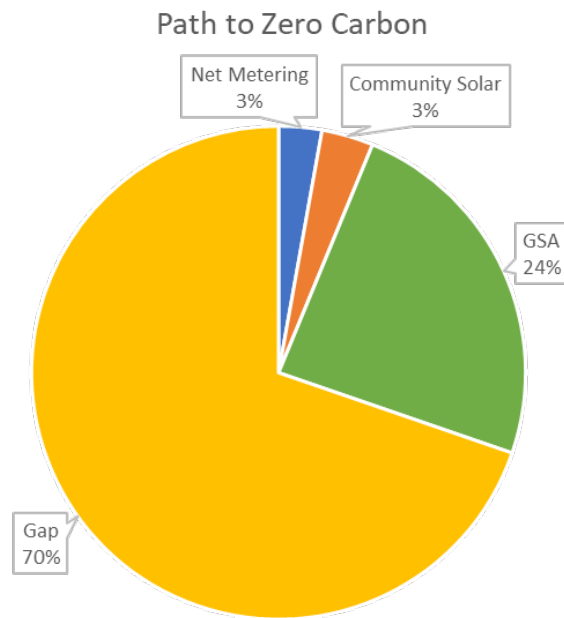
Equity

Transportation

Community
Engagement

PATH TO ZERO CARBON

- By participating in Duke Energy's GSA Program, the City reaches 24% of the 100% zero carbon energy SEAP goal
- Continue to explore onsite and community solar opportunities
 - *Currently have 7 City-owned buildings with solar roofs*



GREEN SOURCE ADVANTAGE PROGRAM

- The term of the GSA Service Agreement is 20 years
 - *Years 1-5: ~\$350K annual premium
 - Years 6-10: ~\$135K annual premium
 - Years 11-15: ~\$250K annual savings
 - Years 16-20: ~\$625 annual savings
- Projected Cumulative Savings: **\$2.0 million** (\$415K NPV)

*Out-year cost/savings values
based on modeled projections*



- *City's current annual electricity spend: \$35M*

The Charlotte Observer

**Charlotte helping build new solar farm big enough
to power 10,000 homes per year**



**Charlotte, NC's green tariff solar deal
could spark wider trend in cities**



WORLD
RESOURCES
INSTITUTE

**Charlotte Is the Largest US City to Purchase
Renewable Energy Through a Green Tariff**

**Duke Energy solar contract, grant for electric-vehicle chargers
approved** 

**CHARLOTTE
BUSINESS JOURNAL**



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Support training individuals with barriers to employment in targeted careers in clean energy and energy efficiency occupations.

- Commercial and residential energy efficiency and building performance
- Solar energy system installers
- HVAC maintenance
- Electricians

**Investment of \$300,000 in workforce training, including work-based learning opportunities*

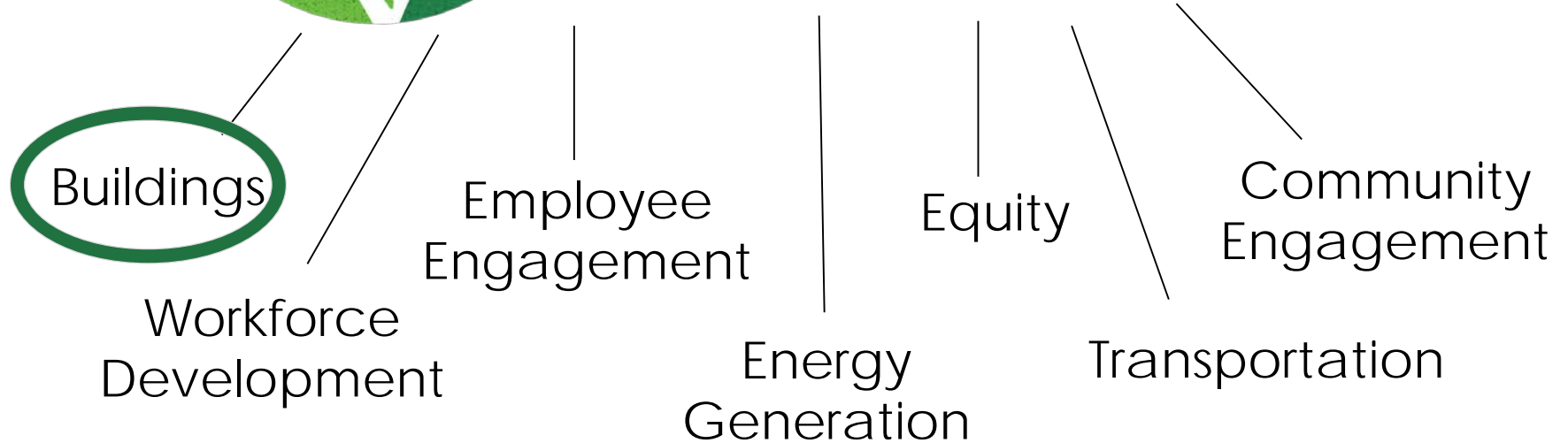




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Strategy: Smart investments that reduce energy consumption and support the generation of on-site energy where possible.

- ✓ Design new facilities to LEED Standards
- ✓ Strive to include on-site solar installations or ensure "solar-readiness"
 - ✓ Five new police stations, two with solar (117kW) and 3 solar ready; One solar ready fire station capable of achieving net- zero energy usage.
- ✓ Maintain and operate existing facilities aligning with energy efficient and sustainable best practices
 - ✓ Numerous equipment replacement projects, such as LED lighting upgrades, HVAC systems, and roofs
- ✓ Earn ENERGY STAR® certification
 - ✓ Three certified facilities: Old City Hall, CMPD LEC, and CLT Water Brookshire



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Draft Automatic Vehicle Locator (AVL) Policy (new)

Requires AVL device installation on most City-owned vehicles. Data will drive the City to make smarter vehicle and transportation decisions by identifying opportunities to reduce carbon through:

1. determining electric vehicle (EV) suitability,
2. fleet right-sizing,
3. and idle reduction

Draft Sustainable and Resilient Fleet Policy (new)

Directs City to engage in vehicle purchase and operating behaviors consistent with the SEAP by directing departments to purchase the lowest-emitting vehicle depending on vehicle class, usage, and available technology

Why invest in AVLs?

Drive the data collection needed to inform decisions directed by the Strategic Energy Action Plan including:

- ✓ Promotion of fleet right-sizing
- ✓ Assessment of electric vehicle readiness and projected placement of charging infrastructure
- ✓ Analysis of vehicle idle times and engine hours to show which vehicles are good candidates for managed idle technology
- ✓ Improves City operations

* Results of a 10 device, 90-day pilot program from Sawatch Labs, which used real time drive data to help determine electric vehicle (EV) suitability, included a recommendation that all ten vehicles tested were candidates for EVs.

Installations to Date

- **617** devices for Charlotte Water
- **49** devices for Charlotte Fire Department
- **200** devices for Charlotte Department of Transportation

June 30, 2020 Goal

- **1,100** AVLs installed

June 30, 2021 Goal

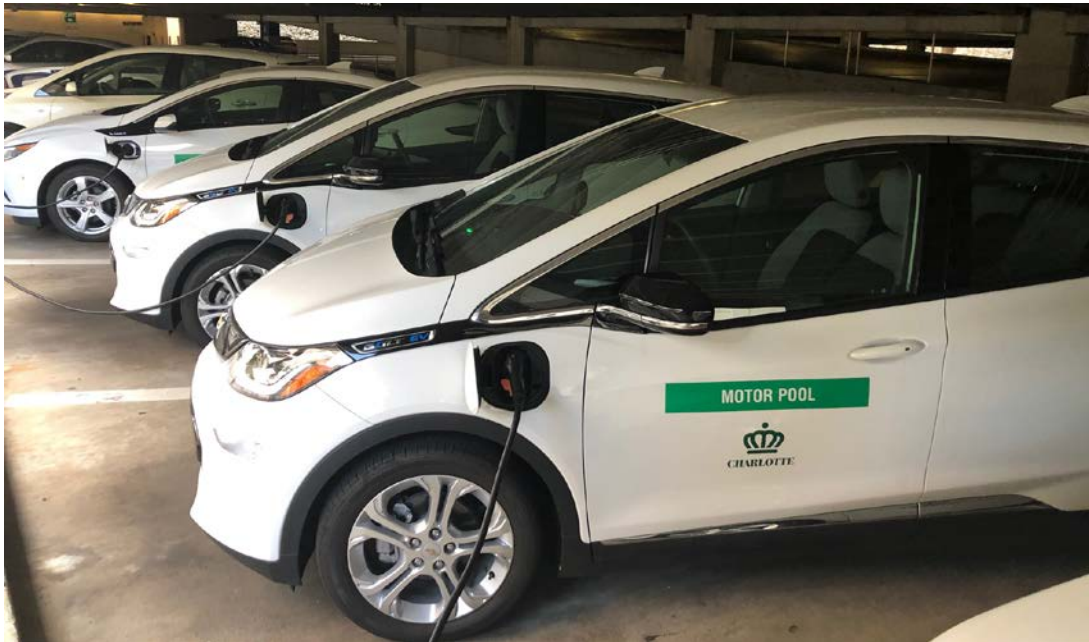
- **2,447** AVLs installed for total of **3,547** (citywide deployment)

AVL Cost

- Investment to date: \$60,620 for 866 devices
- City-wide deployment: \$248,290 for 3,547 devices and annual operating cost of \$766,152 (monthly monitoring fees)

Strategy

- ✓ Prioritize sedans as we wait for improved SUV/Truck technology to improve
- ✓ Evaluate, align and maximize infrastructure investments to support electrification
- ✓ Use our AVL data to support decision-making
- ✓ Look at bridge opportunities



Existing Fleet:
15 Electric
Vehicles

**Existing
Infrastructure:**
48 Electric Vehicle
Charging Stations

Chevrolet Equinox vs. Bolt EV

Capital Purchase

- ❖ Equinox: \$20,755
- ❖ Bolt (Electric Vehicle): \$33,197

Assumptions:

- ❖ 10 year ownership
- ❖ 10,000 miles per year

Fuel Consumption

- ❖ Equinox: 5,281 gallons X \$2.31/gallon = \$12,200 (life of vehicle)
- ❖ Bolt: 28,020 kw X \$0.122 = \$3,418.44 (life of vehicle)
- ❖ Resulting in a reduction of 10,337.69 tons of CO₂ over life of vehicle

TCO Summary

- ❖ Over ten years, the total cost of ownership of the Bolt EV is \$933(1.64%) less expensive than Equinox

CATS' electric bus consultant (STV) provided recommendations on the path to electrification:

- **Initiating BEB test fleet project (2-5 buses)**
- **Develop plan for full fleet electrification**
- BEB bus and battery costs continue to decline
- Demand continues to increase
- Transit Agencies are moving towards electric, phasing implementation over time
 - *(e.g. Seattle by 2040, NYC - 25% by 2025)*



- Transition Airport bus fleet to electric within 10 years
- Benefits Include:
 - Decreased tailpipe emissions
 - Greater availability / fewer buses
 - Decreased maintenance cost
 - Lower total cost of ownership



COMPREHENSIVE SUSTAINABILITY PLAN (CSP)

- Intended to guide CLT to deliver on sustainability targets over the next 20 years
- Provides framework for future Aviation Dept. policy and procedures
- Developed in consultation with internal staff, external stakeholders and community members
- Aligns with City of Charlotte's goals, including the SEAP
- Provides foundation for pursuing Airports Council International's Carbon Accreditation Program



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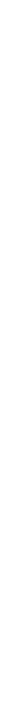
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We Need the Community to Hit the 2050 GOAL

Strive to become a low carbon city by **2050**, emitting less than 2 tons of carbon dioxide equivalent per person



1,385+ community members engaged in 2019



12 SEAP External Content Group Meetings held to date focused on community goals