





CHARLOTTE SM
Strategic Energy Action Plan

Bloomberg Philanthropies

American Cities Climate Challenge

- **Charlotte City Council Resolution**
- **Charlotte Strategic Energy Action Plan**
- **Bloomberg American Cities Climate Challenge**
- **Discussion**

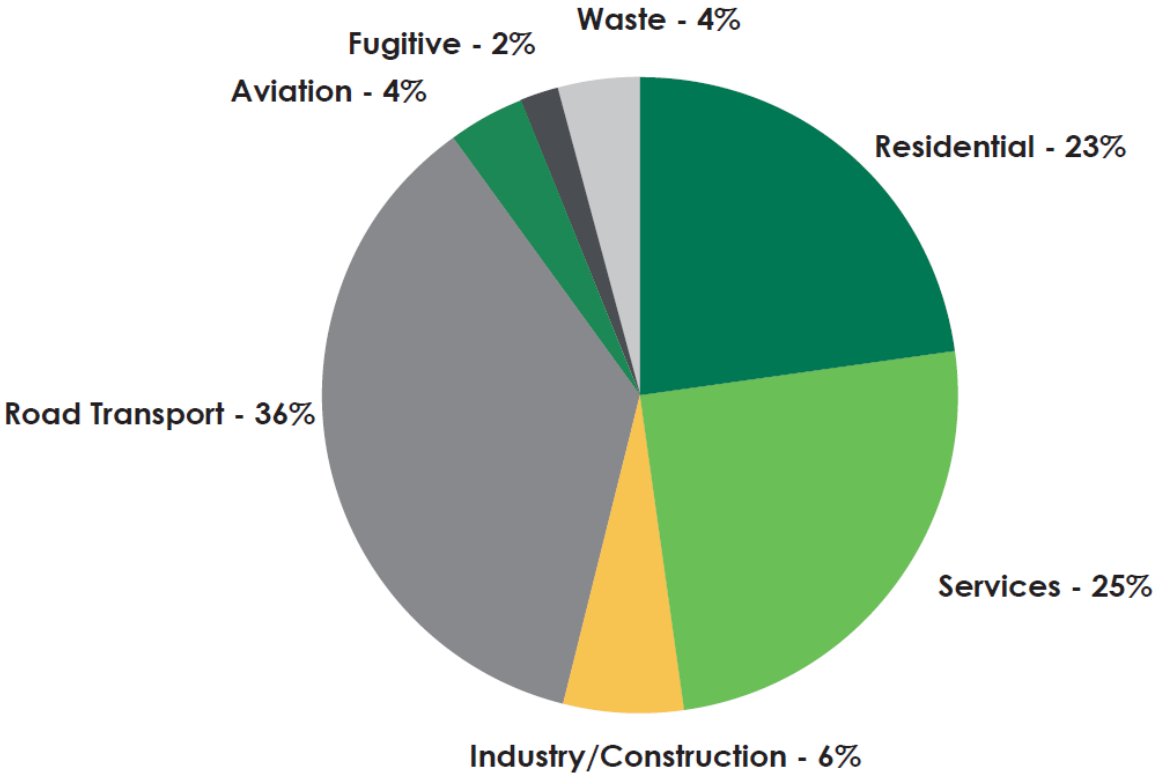
History – Global Covenant of Mayors

- Mayors Clodfelter, Roberts, & Lyles signed Global Covenant of Mayors for Climate & Energy commitment (GCoM).

- Goal: reduction of greenhouse gas emissions from municipal operations and communities to meet goals of the Paris Climate Agreement

2015 Baseline Greenhouse Gas Emissions for Charlotte

We currently emit about 12 tons of CO_2equivalent per person annually according to 2015 baseline.



Read the full SEAP at charlottenc.gov/sustainability/seap

"Sustainable and Resilient Charlotte by 2050" Resolution

1) By 2030, strive to source 100% of City's energy use in its buildings and fleet from zero carbon sources.

2) By 2050, strive to become a low carbon city (average 2 tons CO_2e/person).

3) Develop an action plan as a framework to achieve goals.

Passed by City Council June, 2018

Strategic Energy Action Plan: Duel-Phase Approach

- Community SEAP
- Internal operational efforts toward the 2030 goals will be an appendix to the SEAP, to be updated regularly.

Strategic Energy Action Plan Stakeholder Involvement and Feedback Received

General Themes:

- Timeline
- Natural Gas
- Equity & Inclusion
- Duke Energy
- Regulatory Changes

contents

- 11 Linked Action Areas with focus or

1. Buildings
2. Energy Generation
3. Transportation
4. Workforce Development/Equity

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SEAP

- Foundation of innovation, equity, inclusion, and workforce development.

- 5 Stages to Zero Carbon Energy

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Strategic Energy Action Plan

Internal/Organizational Action Areas

Action Area 1: Structural Change

Action Area 2: Initiate Citywide Communication Toward A Low Carbon Future

Action Area 3: Develop Smart Data Approaches

Action Area 4: Develop And Implement Resilient Innovation Districts (RIDS)

Action Area 5*: Strive Toward 100% Zero Carbon Municipal Buildings By 2030

Action Area 6*: Strive Toward 100% Zero Carbon City Fleet By 2030

Community Action Areas

Action Area 7: Near Zero Carbon Non-municipal Buildings By 2050

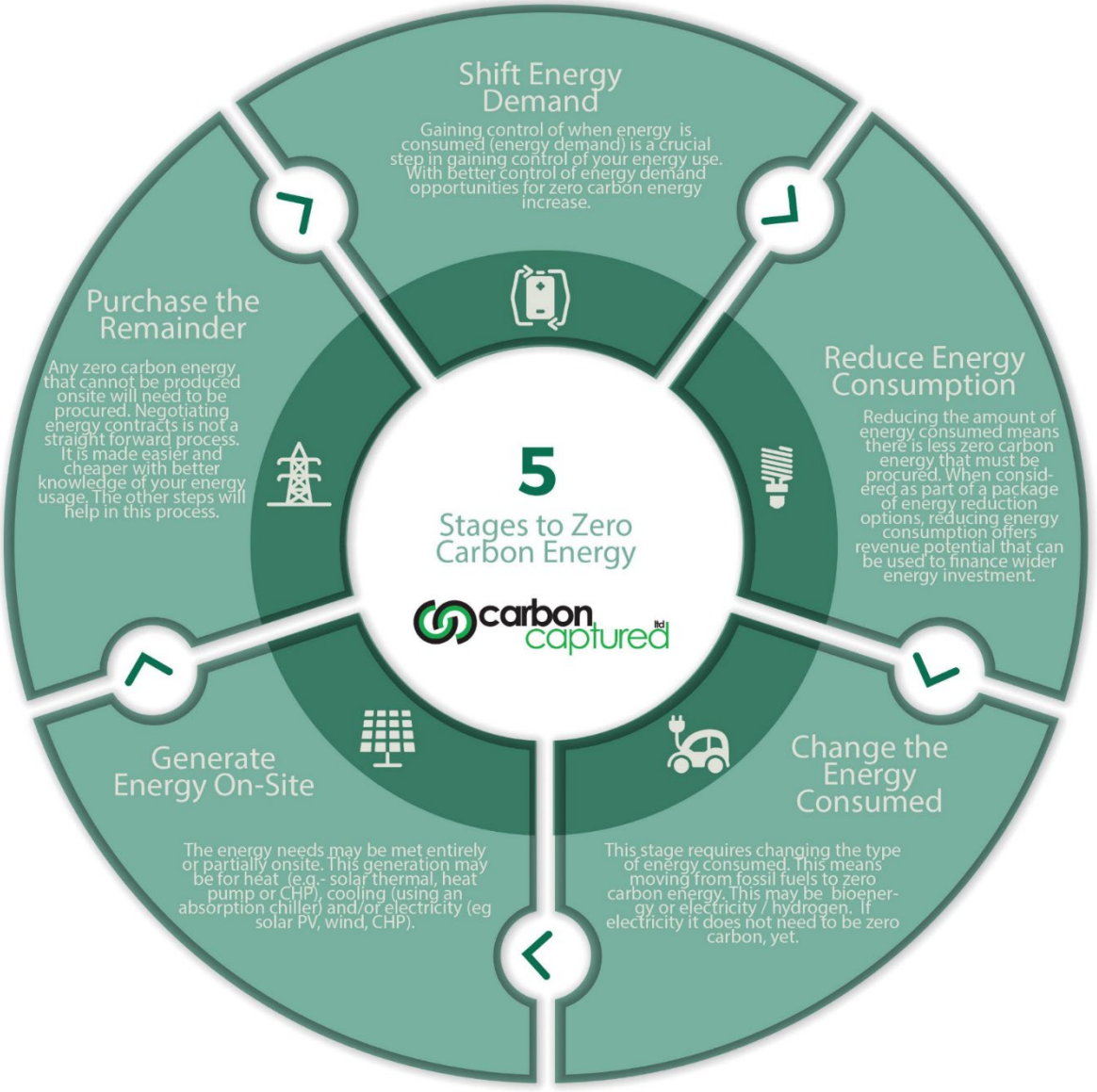
Action Area 8: Facilitate Rapid Uptake Of Sustainable Modes Of Transportation

Action Area 9: Develop And Implement Strategy For Deploying Low Carbon Infrastructure Generation

Action Area 10: Develop Green Workforce Pipeline In Support Of Energy Transition

Action Area 11: Establish Public-Private-Plus Partnerships To Accelerate Transition To A Low Carbon Future

Five stages to zero carbon energy



Pathways to Success in 2030

The Pathways include:

- One asset at a time (retrofit each facility, replace/ retrofit each vehicle, install each charging station)
- Change behaviors
- Large-scale solutions such as large solar fields
- "Purchase" only low/zero carbon electricity sources – AS A LAST RESORT

The Variables include:

- Changing Duke Energy mix
- Technology advances and opportunities

The Funding Approaches include:

- Revolving Fund utilizing energy savings
- CIP/Enterprise Funds/Tourism Fund
- P3 Opportunities
- Grants
- Performance Contracts

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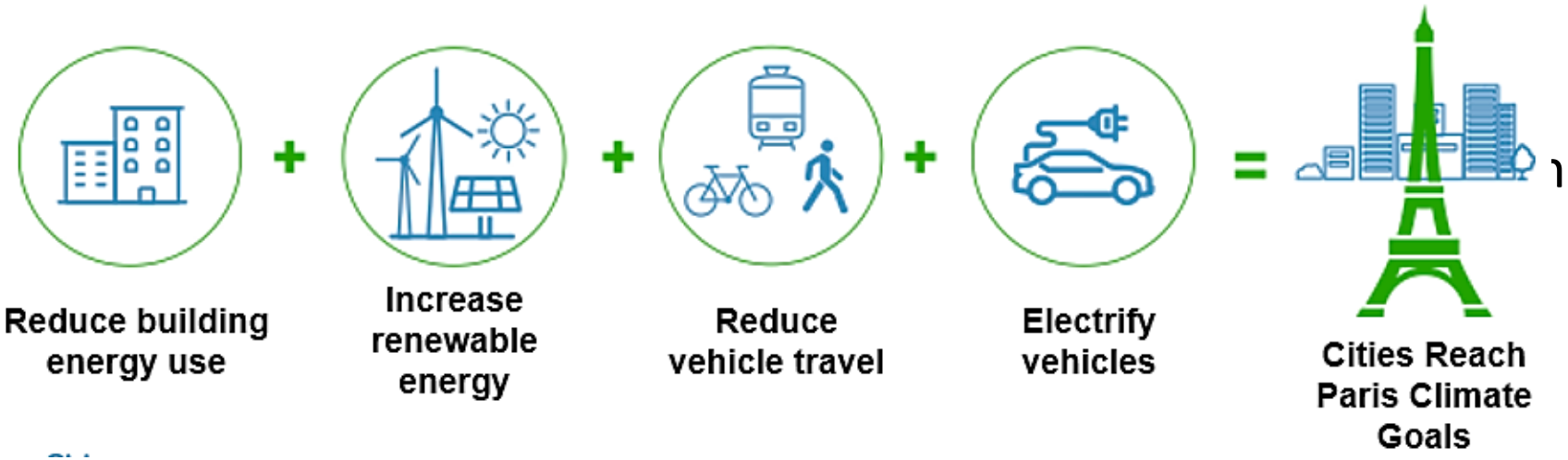
American Cities Climate Challenge

Bloomberg Philanthropies

CLIMATE CHALLENGE

- In December of 2018, Charlotte was chosen as one of the 25 cities to receive the American Cities Climate Challenge
- The **American Cities Climate Challenge** is a Bloomberg Philanthropies initiative that aims to accelerate and deepen U.S. cities' efforts to create the **greatest climate impact through 2020** and showcase the benefits **– good jobs, cleaner air, and cost savings** – that climate solutions brings.

– Support package
  - 2 full time climate advisors
  - Access to technical assistance partners at different levels
  - Micro-grant opportunities



American Cities Climate Challenge

Bloomberg Philanthropies

American Cities Climate Challenge

NRDC

Transportation

- Financing
- Market Transformation for EVs
- Mobility Vision
- Comp Plan & UDO
- Shared Mobility

Buildings

- Energy Efficiency Retrofits
- Renewable Energy
- Workforce Development
- Financing

Action 1.1: Deep Energy Efficiency Retrofits of Cultural Facilities

Foundational Action

2020 Objectives

What would success look like in 2020?

Enhanced partnerships through creative financing and cost-share opportunities

Identify deep retrofit opportunities

Retro-commissioning of 7 cultural facilities

Energy audits for 7 cultural facilities

Educational campaign

Description	Charlotte owns 7 cultural venues, which represent nearly 30% of our building portfolio. There is an opportunity to creatively and collaboratively cut carbon emissions, and operating and maintenance costs. Previous energy audits projected an annual savings of ~1100 metric tons of CO_2 across several venues.
Ownership Who is the primary lead?	Owner: Laurie Sickles Climate Advisor: John Thigpen Key Staff: Heather Bolick, David Miller, Katie Riddle
Key Indicators What metrics will measure success?	• # of energy audits completed • # of retrofit opportunities identified • # of creative financing/cost share opportunities identified • # of facilities contracted for retrofit and retro-commissioning • # of programs across the 7 cultural partners in addition to climate exhibition
ACCC Partners	IMT

Action 1.2: On-Site Renewable Energy & Financing

Foundational Action

2020 Objectives

What would success look like in 2020?

Install ≥5 MW solar array at Statesville Landfill, CLT Water, or CLT Airport

Install a combined total of 500 kW of solar arrays on city-owned buildings (including Cultural)

Install 350 kW of solar PV across Charlotte's Police & Fire stations

Description	Per Duke Energy, currently 58% of Charlotte's electricity generation mix is already from zero-carbon sources, including nuclear, solar and hydro. This leaves 42% for the City to offset the energy consumed by our City buildings and fleet in order to achieve our 2030 GHG emissions reduction target.
Ownership Who is the primary lead?	Owner: Heather Bolick Climate Advisor: John Thigpen Key Staff: Laurie Sickles, Katie Riddle, Alicia Barone, Jackie Jarrell, Amanda Byrum, Will Rice, David Miller
Key Indicators What metrics will measure success?	• # of MW installed on City Property • # of kW installed at City-owned buildings (Statesville Landfill, CLT Water, CLT Airport)
ACCC Partners	RMI/WRI

Action 1.3: Workforce Development

Foundational Action

2020 Objectives

What would success look like in 2020?

City Apprenticeship Program - 7 depts with 25 individuals, in total, training/hired

Project P.I.E.C.E - graduate 100 program participants by 2022

Description	Create "training to job" pipelines in key green industries based on current initiatives. The impact of this work will allow Charlotte to achieve short term and long term GHG reduction and economic mobility goals.
Ownership Who is the primary lead?	Owner: Emily Cantrell & Rob Phocas Climate Advisor: John Thigpen Key Staff: Kevin Dick, Pamela McGimpsey, Alex Alcorn, Carolyn Ross, Sherri Jones, Audrey Abron, Alison Siler
Key Indicators What metrics will measure success?	• # of departments that have hired individuals in work related to Charlotte's SEAP • # of individuals trained • # of individuals hired • # of graduates from Project P.I.E.C.E. • # of clean energy jobs programs that have accepted students from Project P.I.E.C.E • # of external partners confirmed
ACCC Partners	TBD

Action 2.1: Finance Programs Buildings (EE) & Fleet

Ambitious Action

2020 Objectives

What would success look like in 2020?

- **Develop a Total Cost of Ownership Model (TCOM)**
- **Set up an Internal Energy Efficiency Fund**
- **Partner with Bank of America, Wells Fargo and Duke Energy to use appropriate finance tools**

Description	Implement finance programs/policies that finance our ACCC and SEAP work. Bank of America and Duke Energy headquarters are located in Charlotte, and the city is also the Wells Fargo's East Coast HQ. We have secured commitments from these major partners, and have started conversations with all three to work toward our ACCC goals and beyond.
Ownership Who is the primary lead?	Owner: Jennifer Wolf & Rob Phocas Climate Advisor: Catherine Kummer & John Thigpen Key Staff: Phil Reiger, Matt Hastedt, Laurie Sickles, Gina Shell, Alex Alcorn, Jordan Paschal, Chris Cauley
Key Indicators What metrics will measure success?	● $ amount funded/invested ● # of partnerships
ACCC Partners	NRDC

Action 2.2: Market Transformation for EVs

Ambitious Action

2020 Objectives

What would success look like in 2020?

Internal

- **Revise City Fleet Policy to have a ZEV requirement**
- **Two fast charging bus stations**
- **Two fast chargers at the airport**
- **Pass an "EV Ready" bldg code requirement**
- **Deploy solar-powered charging stations (25% of new installs)**
- **Develop an EV motor pool for light-duty municipal operations trips**
- **Replace 20% of unassigned light-duty municipal fleet with EV motor pool**
- **Replace 100% of unassigned light-duty fleet with EV motor pool by 2030**

External

- **35 DC Fast Charging and 200 workplace level 2 stations**
- **100 public level 2 chargers**
- **10,000 privately-owned EVs in CLT by 2020**
- **50% of all privately-owned vehicles in CLT to be EVs by 2030**

Description	Externally, by 2020, Charlotte will implement the Drive Clean Charlotte Program including a foundational network of DC Fast Charging and level 2 stations, encouraging more private ownership of EVs. Internally, Charlotte will strive to eliminate the need for any internal combustion light-duty vehicles within the municipal fleet.
Ownership Who is the primary lead?	Owners: David Wolfe & Erika Ruane Climate Advisor: Catherine Kummer Key Staff: Steve Gucciardi, Chris Trull, Justin Amos, Doug Pierotti, Nick Zorn, Scott Kincaid, Courtney Schultz
Key Indicators What metrics will measure success?	***Internal*** • % of new charging stations planned & installed that are solar • % of light-duty municipal fleet replaced w/ EV motor pool • % of light-duty fleet that is electric by 2030 • # of bus station fast chargers installed • # of DCFC at airport • % of overall fleet that is electric ***External*** • # of privately-owned EVs • # of DCFC planned & installed • # of workplace level 2 chargers installed • # of public level 2 installed
ACCC Partners	Electrification Coalition & Forth

Action 3.1: Accelerate and Finance Key Elements of Mobility Vision

Moonshot Action

2020 Objectives

What would success look like in 2020?

- **Identify innovative funding sources and strategies to finance 2030 Transportation Plan and Envision My Ride**
- **Identify and begin implementation of innovative funding sources and strategies to finance Bike and Pedestrian Infrastructure**

Description	Charlotte is determined to be proactive and align growth with sustainable transportation and land use options. To achieve the 2020 objectives, Charlotte will identify eligible funding sources, apply for relevant funding, and receive funding to support design and implementation.
Ownership Who is the primary lead?	Owners: Jason Lawrence & Rob Phocas Climate Advisor: Catherine Kummer Key Staff: Kathy Cornett, Lorna Allen, Vivian Coleman, Alex Alcorn
Key Indicators What metrics will measure success?	• # of community engagement events • # of attendees of events • # of projects submitted to planning
ACCC Partners	NACTO & Energy Foundation Grant

Action 3.2: Development of a Comprehensive Plan (CP) and a Unified Development Ordinance (UDO)

Moonshot Action

2020 Objectives

What would success look like in 2020?

- **"Carbon cost" will become a standard when talking about growth & development**
- **Measurable results for GHG emission reductions included in Comp Plan and are regularly communicated to our decision makers (ex: City Council)**
- **More than 50% of new residential and 75% of new non-residential will be within 1 mile of high-frequency transit services, activity centers, and/or greenway trail**

Description	Setting and meeting targets for the majority of new, higher intensity development to be in walkable, transit accessible areas, including transit station areas and other activity centers designated in the CP. Incorporating "carbon cost" in the CP.
Ownership Who is the primary lead?	Owners: Kathy Cornett & Lorna Allen Climate Advisor: Catherine Kummer Key Staff: Jason Lawrence, Vivian Coleman, John Howard
Key Indicators What metrics will measure success?	• % of employees that have been engaged and informed of "carbon cost" definition • % of tools & policies that account for "Carbon cost" • # of times we can discuss GHG emissions within comp plan to City Council • % of housing starts within 1 mile of high-frequency transit service, activity center, greenway trail • % sq. footage of non-residential within 1 mile of high-frequency transit service, activity center, greenway trail
ACCC Partners	ULI & NACTO

Action 3.3: Shared Mobility Program

Moonshot Action

2020 Objectives

What would success look like in 2020?

Increased use of scooters/bikes for first and last mile transit trips

Provide car-lite mobility for first/last mile needs

Description	Charlotte will continue to lead the nation in embracing dock-less scooters/bikes, providing car-lite lifestyle options and addressing first and last mile solutions for our residents and visitors.
Ownership Who is the primary lead?	Owners: Vivian Coleman Climate Advisor: Catherine Kummer Key Staff: Jason Lawrence, Tangee Mobley, Dan Gallagher, Erika Ruane, Keith Sorensen
Key Indicators What metrics will measure success?	• # of miles used by scooters/bikes • % increase in trips • # of new users of scooters/bikes • # of total trips by scooters/bikes • # of new bicycle/pedestrian infrastructure miles built
ACCC Partners	Forth

Climate Challenge Technical Partners

WORLD
RESOURCES
INSTITUTE

Recent Milestones

- **EV ARC from CFAT Grant**
  - **Easy install**
  - **Can charge up to 225 miles of EV driving in 1 day**
  - **Emergency Power Panel**
    - ❖ **120 and 240 volt outlets**
  - **40 kWh battery storage**

- **Approval of Contracts for Building Assessments and Energy Audits of Cultural Facilities**

Memorandum of Understand with Duke Energy

DUKE ENERGY®

Goal: to establish a low carbon, smart city collaboration

- Example projects:
  - Smart Technology: battery storage, smart grids, multi-use poles and lighting
  - Energy Efficiency: LED street lights, other retrofits
  - Fuel-Switching Mobile Sector (electric vehicles): electric vehicle infrastructure, fleet investments, charging stations
  - Fuel-Switching Stationary Sector (using electricity for building and water heating): waste to heat capture
  - Resilience: microgrids, district energy and battery storage, emergency preparedness
  - Transparency and Data Access: further the sharing of data as appropriate for low carbon goals

Community Safety

Economic Development

Housing & Neighborhood

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SMART DISTRICT

Environment

Transportation

in Charlotte

February 15, 2017

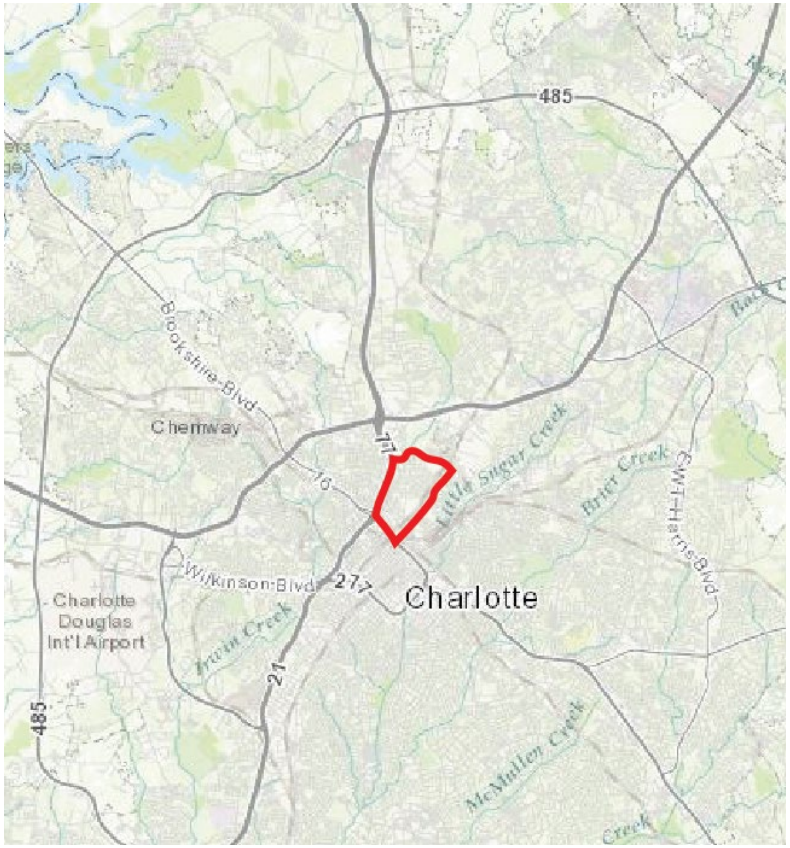
What is a “Smart” City?

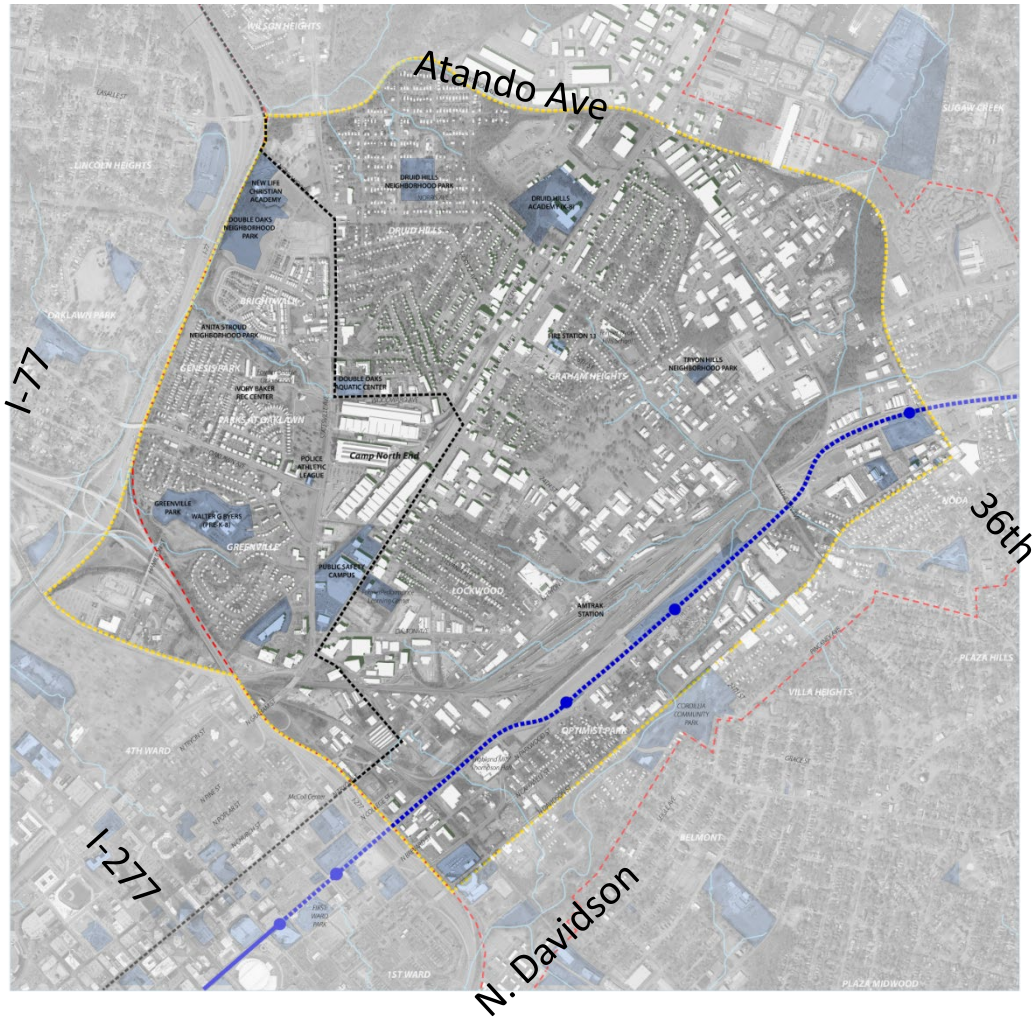
A “Smart City” **collaborates** to use **data** and **technology** to inform decision-making and action on issues such as: mobility; safety; energy efficiency; community services; education; and environmental health.

Question of the Day . . .

- Can innovative smart city technology create coherent and inclusive cities?
- No
- They are tools to be used by people for people.

The North End Smart District (NESD) Boundaries





What are the NESD neighborhoods?

Optimist Park

Lockwood

Graham Heights

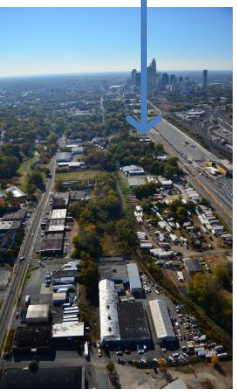
Druid Hills

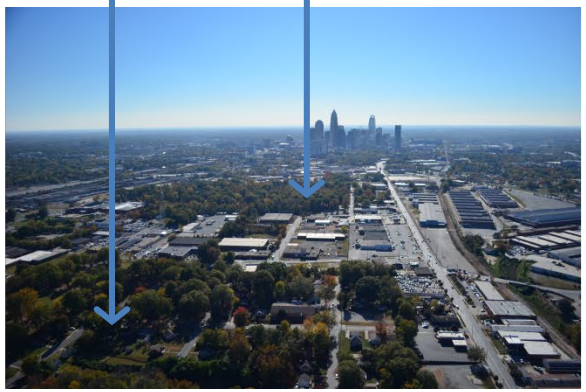
Greenville

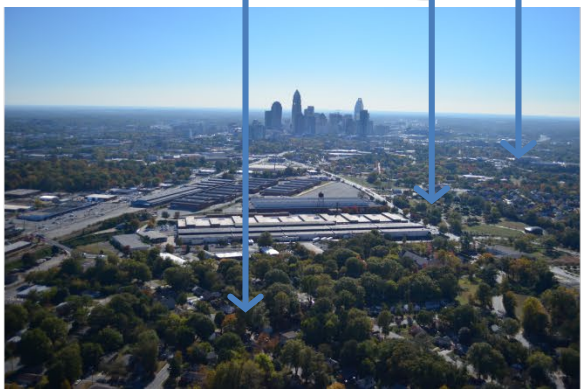
Park at Oaklawn

Genesis Park

Brightwalk







What is the Vision for the NESD?

A vibrant center for economic development and job growth with a great quality of life fueled by data, innovative technologies, and collaboration on a foundation of equitable community engagement.

6 Pillars

1. Distributed Energy Micro Grid with Battery Storage
2. Gigabit Fiber Service
3. Leverage CIP Infrastructure Projects
4. Big Data
5. Facilitate an Innovation Campus
6. Building Human Capital

Building Human Capital

- How do we create economic mobility opportunities and address community identified needs?
  - Bridging Digital Divide
  - Strengthen Workforce Development
  - Create Employment for Existing Local Residents
  - Address Affordable Housing/Gentrification
  - Improve Mobility Options
  - Address Homelessness
  - Improve Streetscape of Major Roads
  - Protect Community Character

Community Engagement

- Meeting with neighborhood presidents and then residents.
- Dialogue with residents around hopes and fears and hesitations.
- Building community with residents, not for them.

It's Collaborative Relationships

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It's Community Driven Solutions

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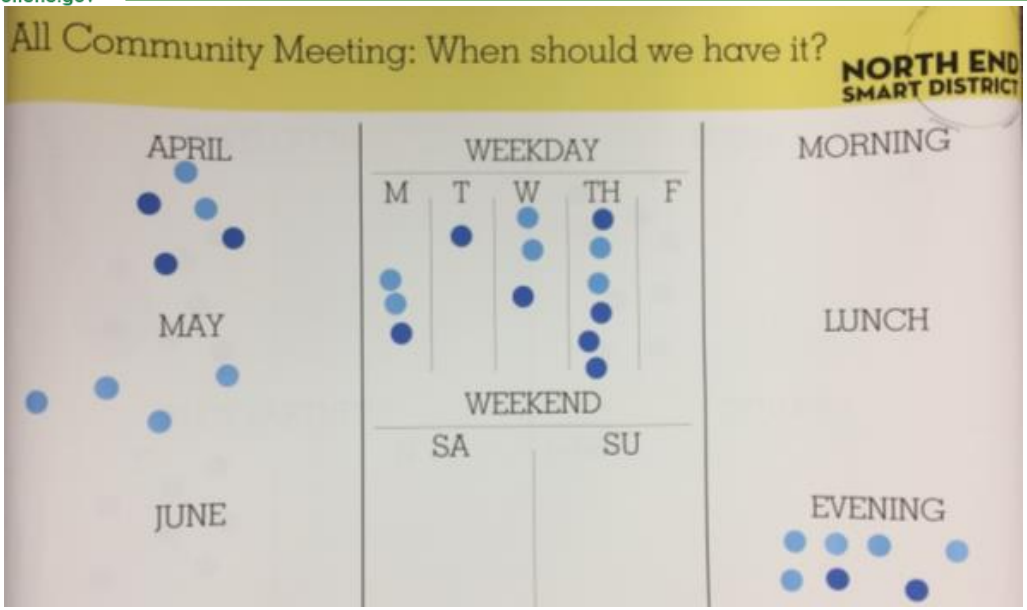
It's Co-Created Meetings + Outreach



KEY PRINCIPLES:

- Venue in Community
- Evenings / After Work
- Thursdays preferred
- Provide Childcare
- Provide a Meal

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It's Co-Created Kick Start Projects

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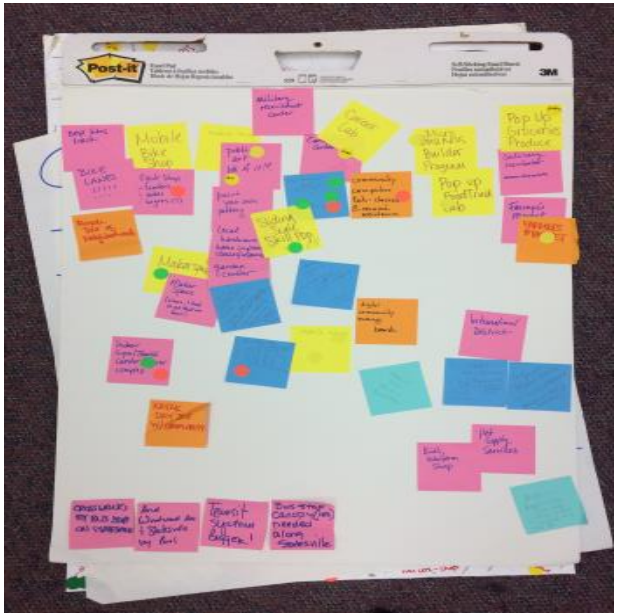

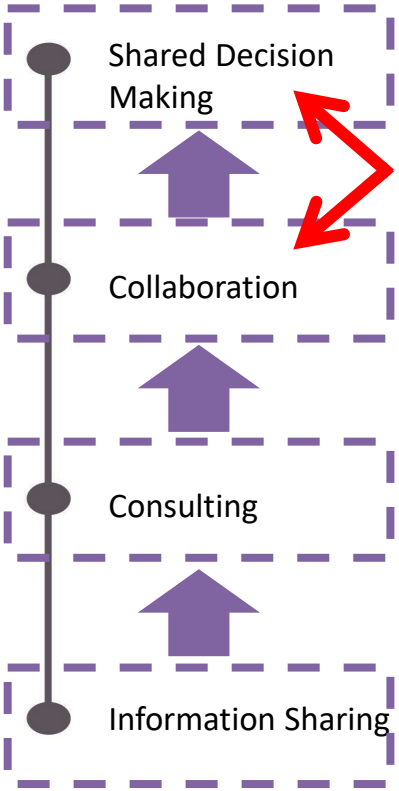
Shared Decision Making
Collaboration
Consulting
Information Sharing


9

NESD Kick Start Projects

1. Smart Home Utilities Savings
2. Mobility + Transit Options
3. Healthy Communities
4. Technology Training/Internet Café
5. Build your Own

Innovative Results

- Collaborative Relationships

- Private Sector Investments

- Community Driven Solutions

- Public Sector Spin Off Initiatives

- Co-created Kick Start Projects

- Co-created meetings + Outreach

- Projects that Better Serve the Community

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