



Strategic Energy Action Plan Discussion and Path Forward

City Council Action Briefing December 3, 2018



- Mayor & Council Actions History
- Strategic Energy Action Plan Framework
- Context and Key Considerations for Delivery
- Path Forward





 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



- November 2017, City Council considered a Clean Energy Resolution; referred to Environment Committee.
- Sustainable & Resilient Charlotte by 2050 Resolution.
- June, 2018 full City Council adopted Resolution.
- June, 2018 December, 2018: SEAP Development.





- By 2030, <u>strive</u> 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.



- Conversation among global leaders
 - Intergovernmental Panel on Climate Change, 5th Assessment Report (October)
- Conversation among US leaders
 - Fourth National Climate Assessment (November)
 - Bloomberg American Cities Climate Challenge
- NC Governor's Executive Order No. 80
- Environmental Defense Fund's Cities Initiative
 - Raleigh, Cary, Durham, Ashville, Greensboro, Wilmington, Fayetteville



Global Context

- No city has found the exact recipe for success
 - Cities, Nonprofits, Companies, Academia working together
 - USDN Workgroup
 - Monitor improving technologies
 - Costs will be refined continuously
 - Grants, Partnerships, Innovative Funding



- Rigorous analysis of costs and benefits
 - Total Cost of Ownership including Social Cost of Carbon



Strategic Energy Action Plan (SEAP)



- Focuses on GHG emissions
 reduction, and includes
 opportunities to align economic development policy.
- Developed in partnership with Envision Charlotte and Carbon Captured, Ltd.
 - Three core components:
 - (1) a baseline assessment;
 - (2) a vision with targets; and
 - (3) a framework for achieving targets.

Living document; reviewed biennially



SEAP Engagement

Goal: All Voices Are Heard

- To Date
 - City Departments
 - Community
 - Stakeholders
 - Experts



- Going Forward
 - More neighborhood-level and community group interactions, e.g., SEAP roadshow
 - Tuesday Morning Forum
 - Charlotte Rotary



SEAP Contents



- Focuses on:
 - 1) Buildings;
 - 2) Transportation; and
 - 3) Energy Generation.
- Foundation of innovation, workforce development and equity/inclusion.
- 11 Linked Action Areas:
 - 6 internal-focused
 - 5 community-focused
- 5 Stages to Zero Carbon Energy



Shift Energy Demand

Gaining control of when energy is consumed (energy demand) is a crucial tep in gaining control of your energy use. With better control of energy demand opportunities for zero carbon energy increase.

Purchase the Remainder

Any zero carbon energy that cannot be produced onsite will need to be procured. Negotiating energy contracts is not a straight forward process. It is made easier and cheaper with better knowledge of your energy usage. The other steps will help in this process.

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Stages to Zero Carbon Energy



Reduce Energy Consumption

Reducing the amount of energy consumed means there is less zero carbon energy that must be procured. When considered as part of a package of energy reduction options, reducing energy consumption offers revenue potential that can be used to finance wider energy investment.

Generate Energy On-Site

> The energy needs may be met entirely or partially onsite. This generation may be for heat (e.g.- solar thermal, heat pump or CHP), cooling (using an absorption chiller) and/or electricity (eg solar PV, wind, CHP).

Change the Energy Consumed

This stage requires changing the type of energy consumed. This means moving from fossil fuels to zero carbon energy. This may be bioenergy or electricity / hydrogen. If electricity it does not need to be zero carbon, yet.

International international



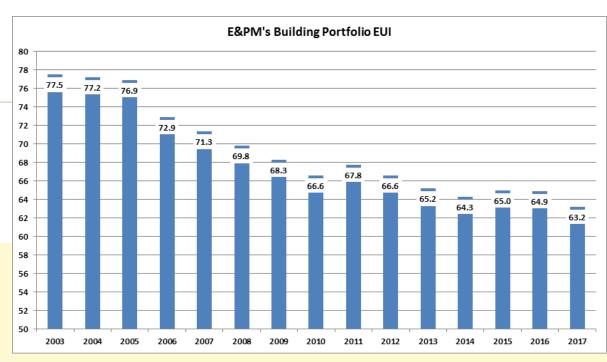
SEAP Delivery Structure

- Workgroups:
 - Internal steering team
 - 3 Internal
 - 4 External:
 - Member Selection Process
- Stakeholder Engagement
- Content Expert Advisory Group
- Quarterly Updates to Environment Committee
- Periodic Updates through Action Briefings





Our Track Record: Facilities



- \$29M Savings from 2003 to 2017
 - Efficient Replacement Equipment
 - Deep Energy Retrofits
 - Electric rate analysis and adjustments
 - Duke's Incentive Program
- Energy Star Certifications
 - 2016: 6 facilities
 - 2018: 4 facilities
- LEED: 3 Gold, 2 Silver, 1 Certified
- Green Globes: 1 3-Globe

Facility Portfolio Low Carbon Potential



Cultural Facilities	Green-highlighted facilities are good					
Fire/Police Stations	candidates** for transitioning to					
Office Buildings/Labs/Shops	lower/zero carbon for many operational uses.					
Approximately 6M square feet						
**Energy retrofits ma	y carry significant cost.					
Water/Wastewater Treatment Plants	Yellow-highlighted facilities could be					
CATS Facilities	more difficult to transition to lower/zero carbon					
Airport Facilities	due to concerns about operational risks,					
	costs of alternatives, or technological readiness.					



- 5000 vehicles/equipment
 - 10 Electric, 27 Hybrid, 29 CNG
 - 40 Hybrid Buses
 - Buses will transition to CNG/biofuel, paying attention to improving EV technology
 - CMPD piloting hybrid pursuit vehicles
 - Charging capacity at all new facilities
 - NAFA "Top 100 Fleets" 2014 2018
 - Government Fleet Magazine "Leading Fleets 2015 – 2018
 - NAFA "100 Green Fleets" 2018



SPECIAL



Fleet Portfolio Low Carbon Potential



	Green-highlighte	d vehicles are good**	
Non-Public Safety Sedans	candidates for tr	ansitioning to	
**upfront costs are higher	lower/zero carb	on for many operationa	al uses.
**fueling/charging infrastructure will be required			
Passenger Buses (Airport/CATS)			
Vans	Yellow-highlighte	ed vehicles could be	
Sport Utility	more difficult to	transition to lower/zer	o carbon
Light Duty	due to concerns	about operational risks	,
CMPD Patrol	costs of alternati	ives, or technological re	adiness.
Medium Duty			
Heavy Duty			
	Red-highlighting	indicates that there are	e
	currently no opti	ions or extremely limite	ed options
Fire Trucks	for transitioning	to lower/zero carbon d	ue to concerns
	about operation	al risks, costs of alterna	tives,
	or technological	readiness.	



Pathways may include:

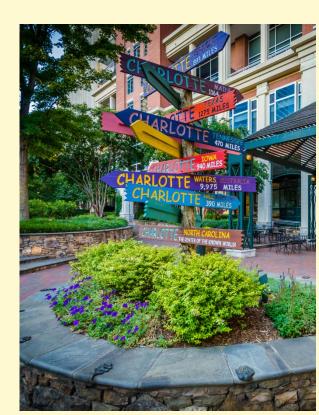
- New construction, retrofit facilities, new or converted vehicles
- Change behaviors
- Large solar fields
- "Purchase" low/zero carbon electricity sources LAST RESORT

The Variables include:

- Changing Duke Energy mix
- Technology advances and opportunities

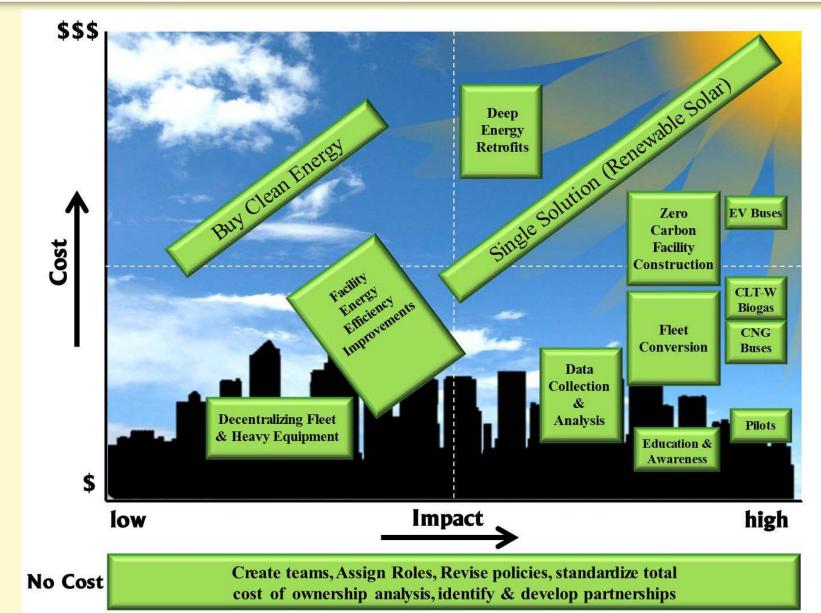
Funding Approaches may include:

- Utilization of energy savings
- CIP/Enterprise Funds/Tourism Fund
- P3 Opportunities
- Grants
- Performance Contracts
- Green Bonds
- TOTAL COST OF OWNERSHIP





A Tool for Visualizing Relative Costs and Impacts





- Readiness for grant/partner opportunities
- Further clarify upfront costs and total cost of ownership
- Formation and chartering of teams
- Policy recommendations
- Education, awareness, marketing
- Exploration and expansion of partnerships
- Data-gathering and analysis
- Get projects "shovel ready" to leverage opportunities



- SEAP Action Area 2 devoted to Communication
 - Communications plan
- Marketing Charlotte as a leader among cities
- Demonstrating Leadership by Example for the community
 - Team Work Makes the Dream Work
 - Opportunity for co-branding with partners
- Economic Impact
 - Re-energize Energy Capital effort
 - CRVA



City Council's Role

- Continued commitment to the goals set out in Resolution
- Consideration of:
 - Policy Recommendations
 - Annual Budgets, Grants Acceptance
 - Condition Assessments/Audits/Analyses
 - Design Contracts, Construction Contracts
 - Performance Contracts
 - Partnership Agreements
- Employ New Lenses
 - Total Cost of Ownership
 - Horizontal application of SEAP
- NCGA Legislative Agenda
 - e.g., explore procurement and building code changes
- Biennial review/update of SEAP
 - Occasional presentations to full Council
 - Quarterly reports to Environment Committee



Milestones: Next Twelve Months

		Internal									External														
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Теа	m Building																								
	Determine Team Structures																								
	Author Team Charters																								
	Identify Team Members/Chairs																								
Pol	icy Recommendations																								
	Facilities																						\square		
	Fleet																								
Wo	rkplans																								
	Teams will create workplans																								ļ
Dat																									
	Audit of raw data available																								
	Data scrubbing and improvements																								
	Analyses/visualizations																								
Con	nmunication, Awareness & Marketing																								
	Educate, raise awareness, tell the story																								
Par	tnership Development																								
	Identify and formalize partnerships																								
	Outreach effots with potential partners																								
	Introductory meetings																								
	Identify specific projects																								
	Project communication																								
Rep	oorting																								
	Report out quarterly																								
Gra	nts																								
	Monitor for grant opportunities																								
	Author grant applications																								



Next Step



December 10th: SEAP on Council Agenda for consideration and vote