City of Rochester Climate Action Plan

Stakeholder Advisory Committee Workshop 2

April 7, 2016

brendle GROUP

Bergmann associates
architects // engineers // planners

Agenda

Start Time	Agenda Item
9:00	Welcome and Introductions
9:10	Recap from Workshop 1
9:40	Strategy Review
10:30	Break
10:40	Strategy Review (cont'd)
11:20	Introduction to Implementation
11:50	Wrap-Up/Next Steps

Introductions

- Name
- Affiliation
- Did you attend Workshop 1?

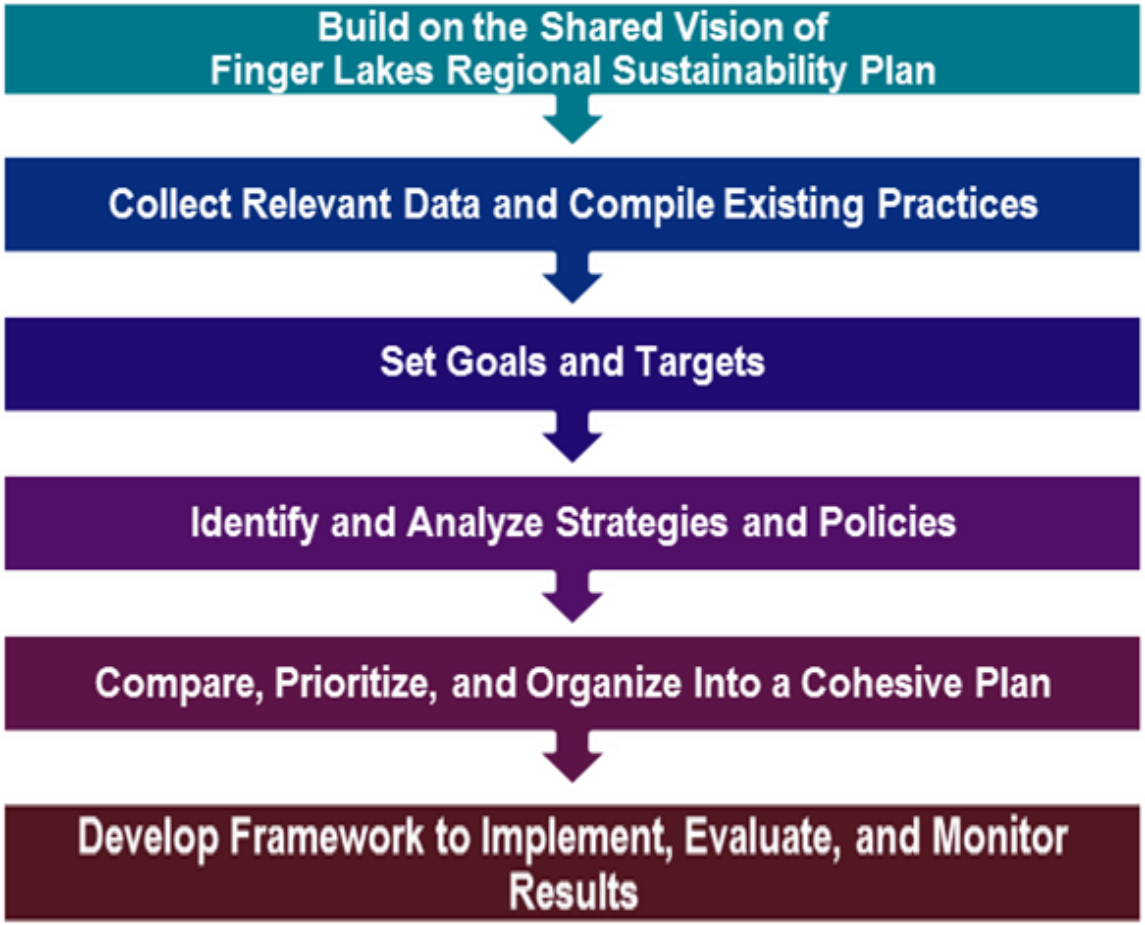
Role of the Stakeholder Advisory Committee

- Provide your expertise and knowledge of sustainability initiatives in the Rochester region
- Participate in three workshops (January, March/April, May/June)
- Looping Approach – will introduce/preview the upcoming topic in the current meeting
  - Topic 1: Baseline and Goal Setting
  - Topic 2: Strategy Identification and Analysis
  - Topic 3: Plan Implementation

Project Scope

Objective:

To develop a City of Rochester Climate Action Plan that sets greenhouse gas emissions target reduction goals and identifies actions to achieve those goals.



WORKSHOP #1 RECAP

Climate Action Plan Focus Areas

- Energy Use and Supply
- Transportation
- Waste and Materials Management
- Clean Water
- Land Use

* Community Health and Wellness will be woven throughout the plan

Survey Results: 3 Key Words For the Climate Action Vision Statement

- Resilient: 69%
- Adaptive: 31%
- Community Engagement: 31%
- 100% Renewable Energy: 21%
- Healthy: 21%
- Interconnected: 21%

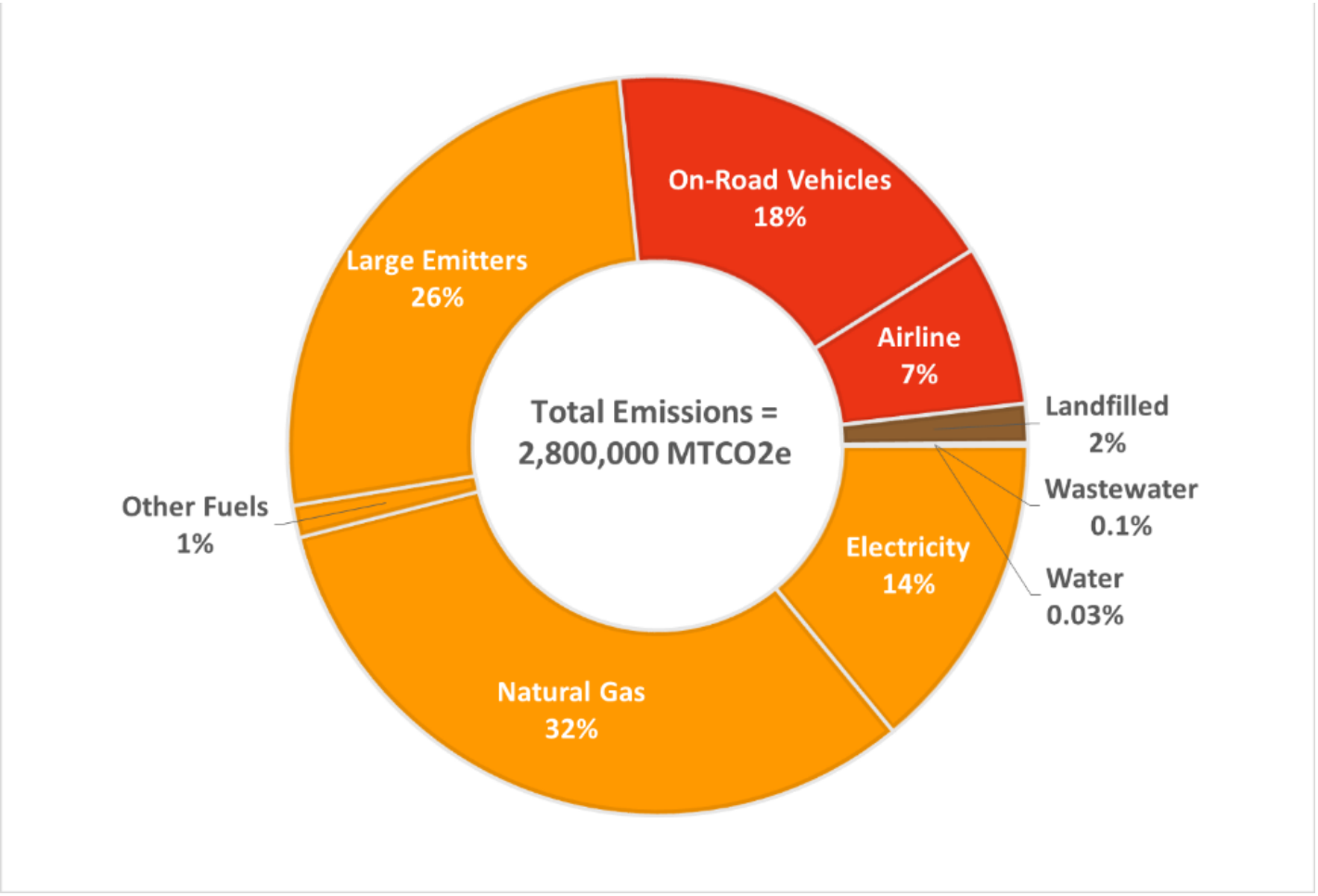
Community-Wide Climate Action Plan

Rochester, NY

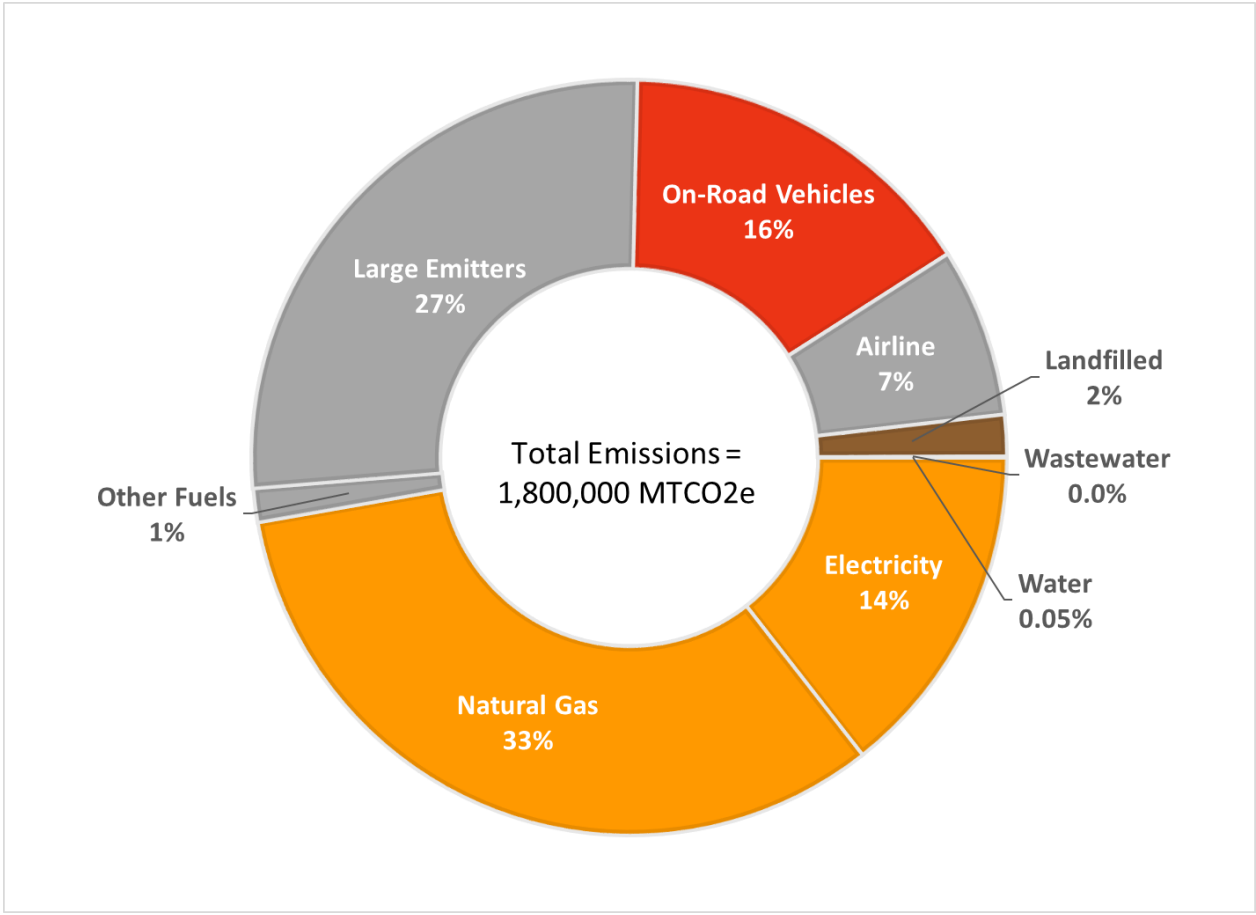
Efficient. Clean. Healthy. Connected. Inclusive

Reducing greenhouse gas emissions for a resilient and sustainable future.

2014 Emissions by Source



Adjusted 2014 Emissions by Source

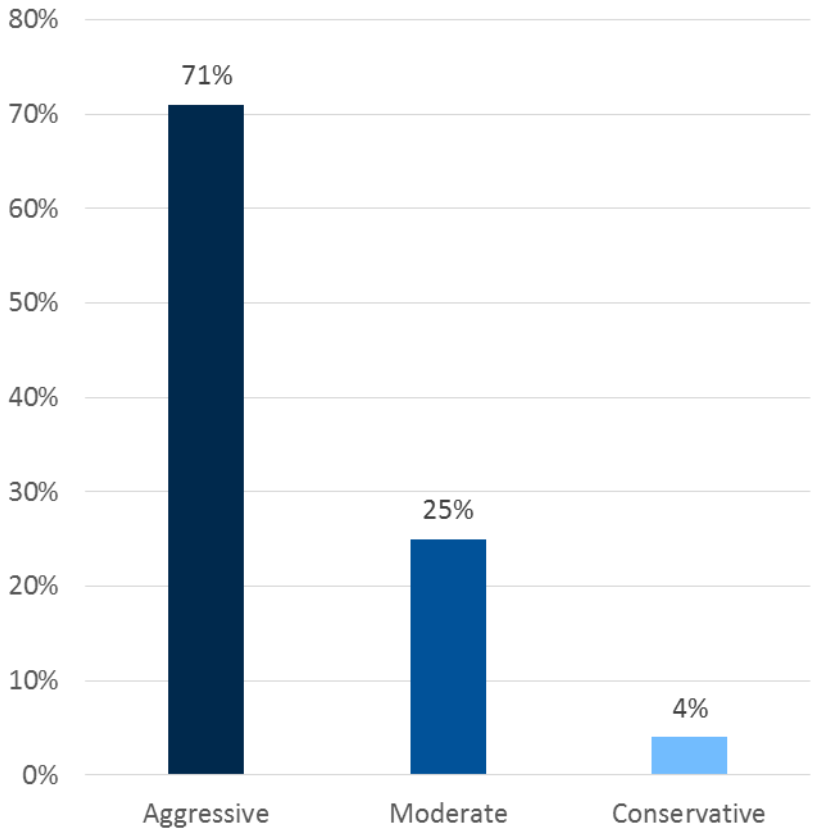


Rochester Climate Vulnerabilities Summary

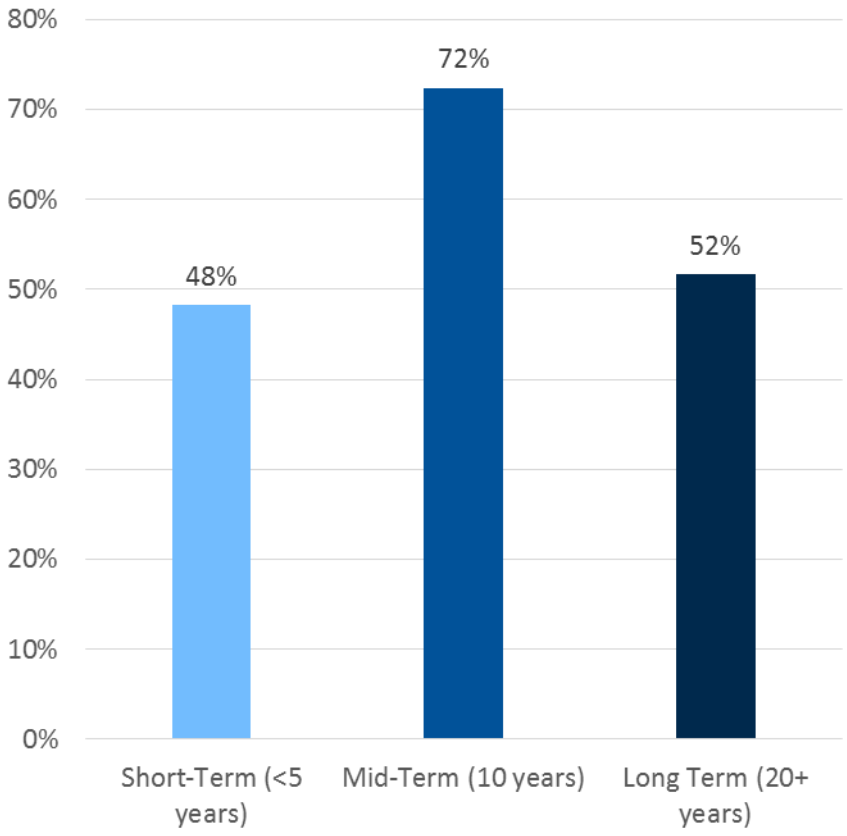
Low	Medium-Low	Medium	Medium-High	High
Increased water demand/cost	Changes in water pumping and treatment patterns	Decreased stormwater quality, increased combined sewer overflows	Greater algae growth	Increased infrastructure maintenance
Increased pollutant toxicity	Increased water storage needs and related impacts	Decreased snow pack and river freezing	Increased survival and transmission of parasites and bacteria	Increased infrastructure disruptions due to extreme events
Longer composting season	Longer growing season	Increased soil erosion	Reduced fisheries production	Decreased food production, increased crop loss
	Increased walking/ biking opportunities	Increased diseases, vector borne illness, and pests	Decreased groundwater levels	Higher intensity of heating and cooling degree days
	Changes in public transportation use	Decreased winter road treatment	Greater threat of invasive species	Increased disease concerns
	Increased odor concerns	Increased freeze/thaw cycles	Decreased walking/biking due to higher heat days	Air quality impacts on health
	Increased organic waste generation	Increased energy cost, decreased availability	Increased electricity demand	Loss of winter recreation activities
		Decreased heating degree days and associated energy use	Increased risk to vulnerable populations	
		Changes to population distribution and infrastructure needs	Increased heat and drought related health impacts	

Survey Results: Goals and Planning Horizon

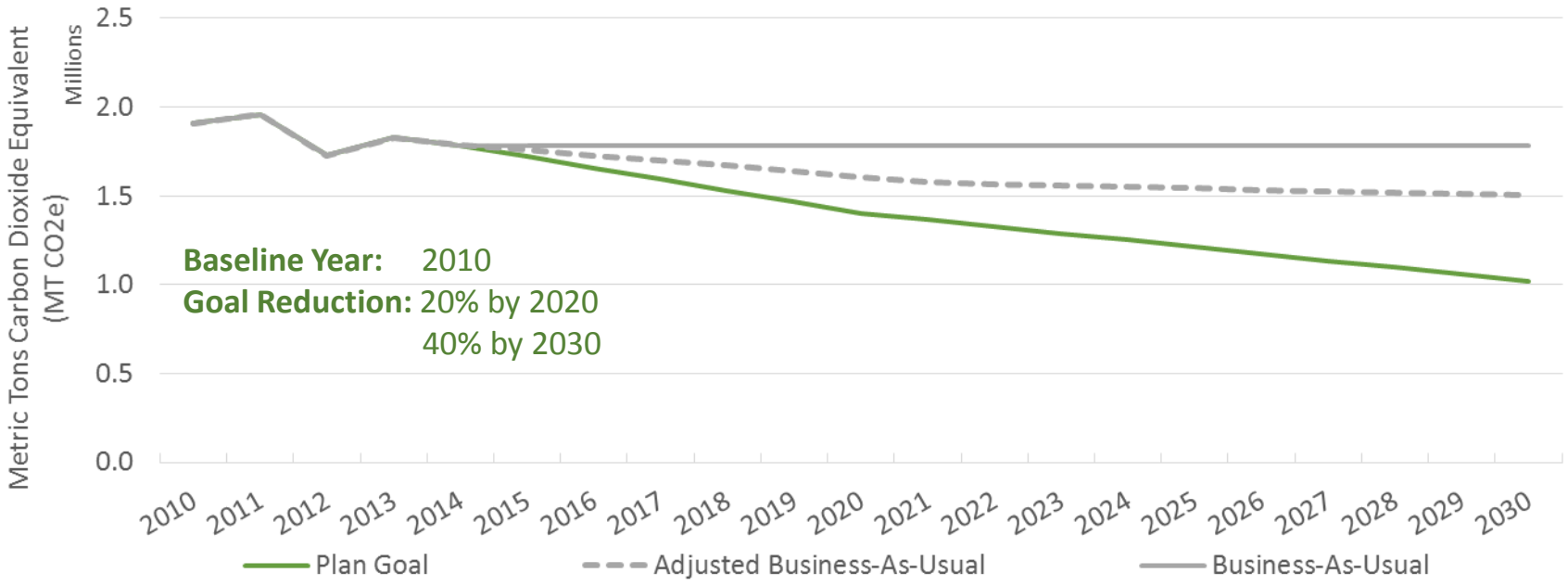
Approach to Climate Action



Planning Horizon



Rochester Climate Action Plan Goals



Scale	Benchmark Goal	Source Target	Baseline Year	Goal Reduction
Municipal Operations	Energy Plan Climate Action Plan	Energy GHG	2010 2008	20% by 2020 20% by 2020
Community	Energy Plan	Energy	2010	20% by 2030
State	2015 New York State Energy Plan	GHG	1990	40% by 2030 80% by 2050

Additional Survey Feedback/Questions

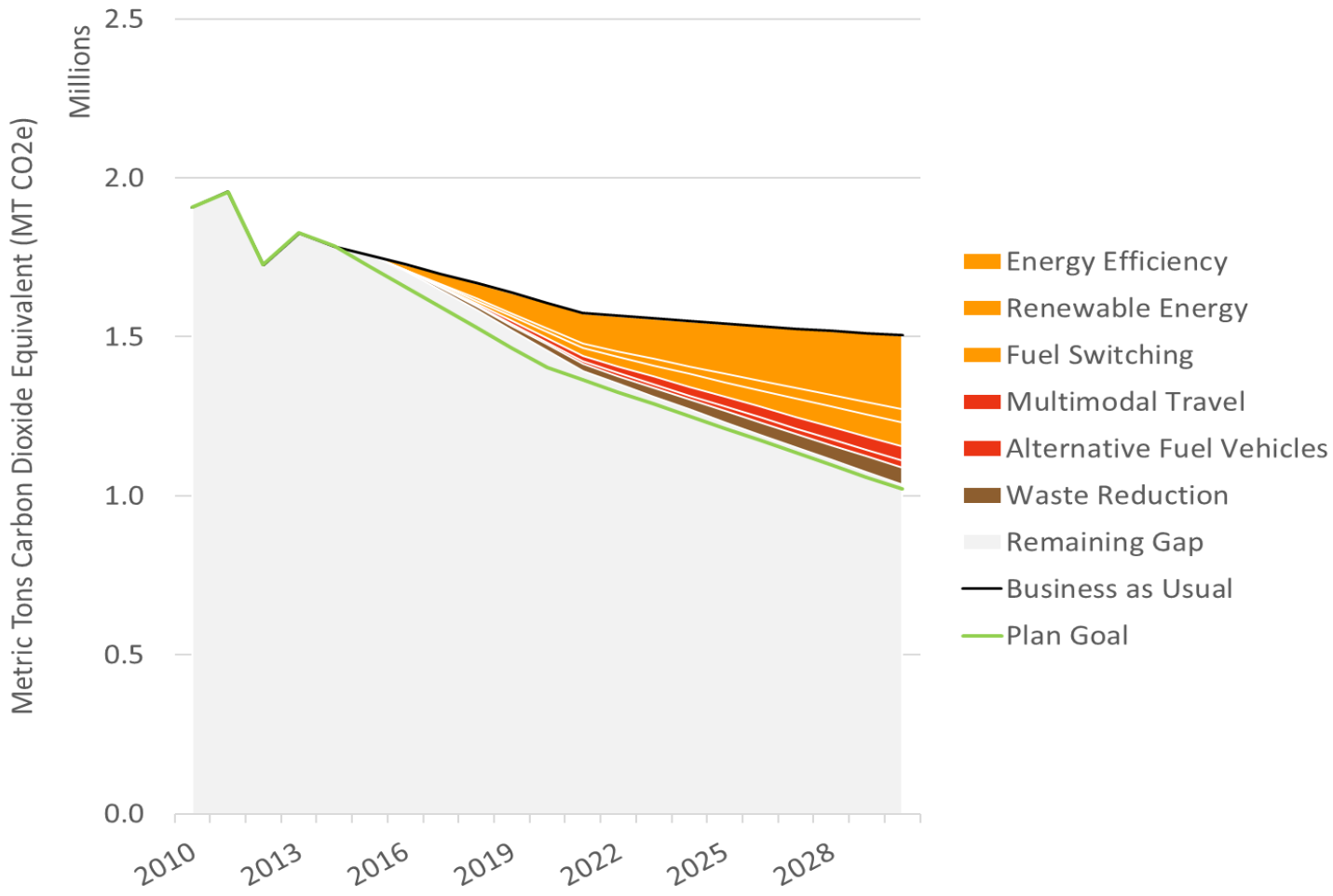
- How does plan get implemented over time?
- Efforts should be focused on high priority areas
- Need immediate bold action with concrete goals
- Need to extend programs currently in place and implement new ones especially in alternative energy generation.

STRATEGY REVIEW

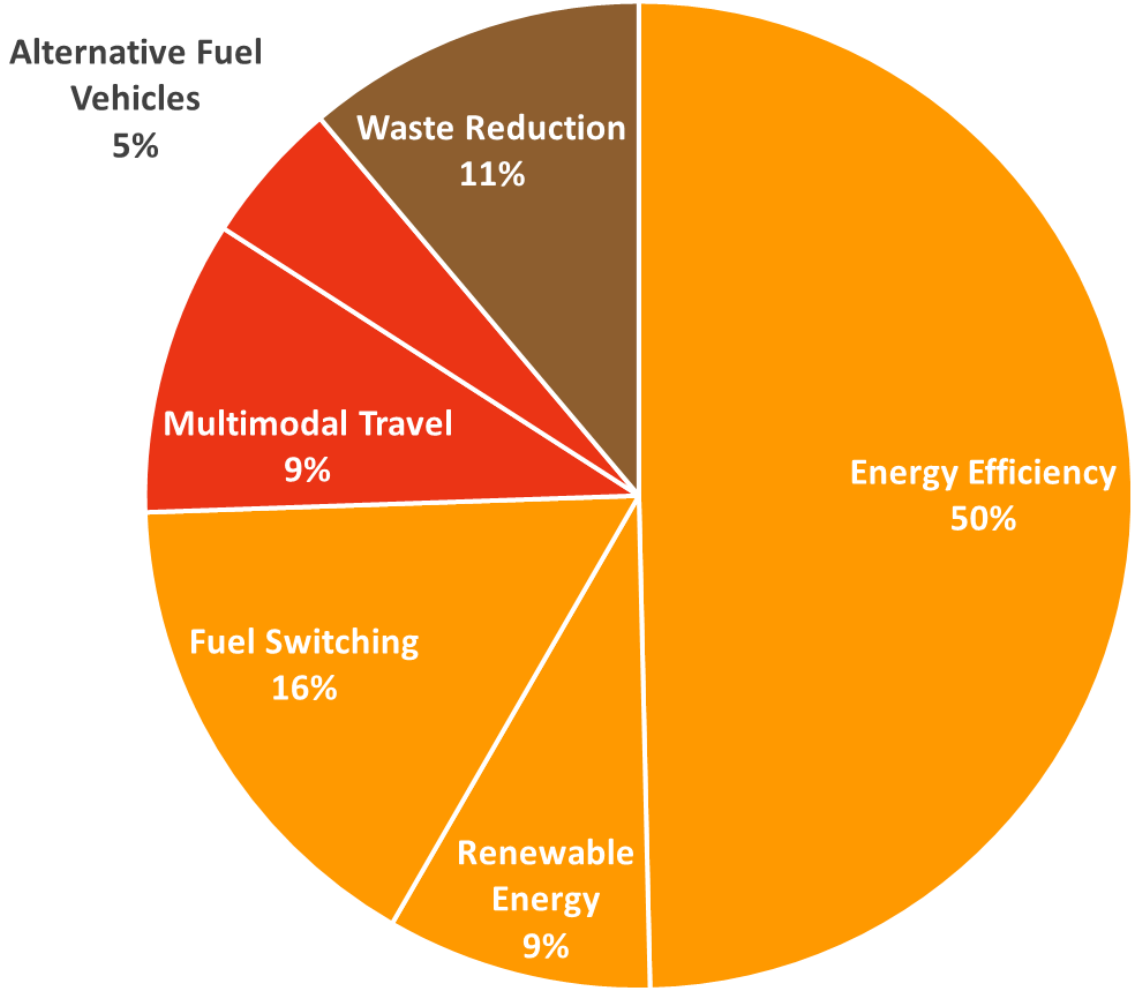
A Strategy Is…

- An implementable and measureable action that helps you meet your targets – your recipe for success.
- Linked to vision, focus areas, and goals
- Measurable
- Actionable by the community (local control)
- Widely Supported
- Cost effective
- Selected based on baseline data/trends
- Grounded in priorities identified by the community
- Many times developed to leverage existing activities

Mitigation Strategy Wedge Diagram



Mitigation Strategy Contributions



Economic Analysis

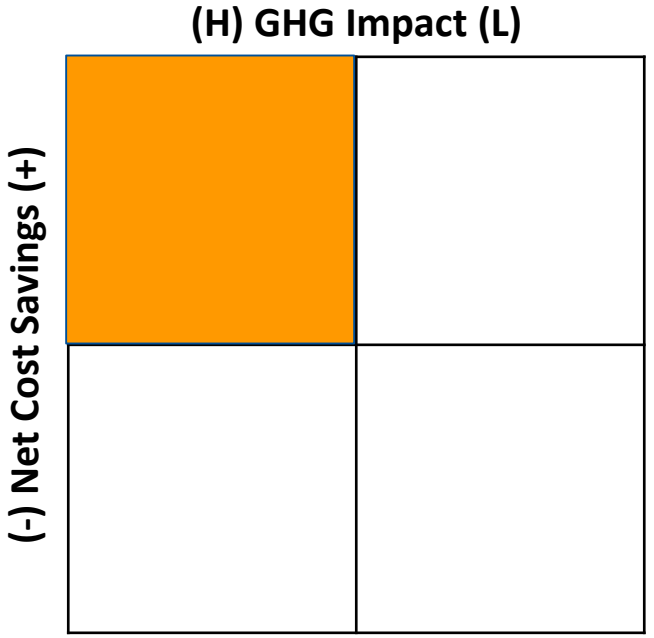
By 2030	
Cumulative Implementation Cost	$1 Billion
Cumulative Cost Savings	$700 Million
Net Cost	$300 Million
Break-even	2034

- Assumptions:
  - Utility price escalation ranging from 2.1% to 4% annually (Energy Information Administration)
  - $25 per ton cost of carbon included in rate assumptions
  - 5% discount rate

Energy Efficiency

Perform retrofits in existing buildings and new construction to reduce building energy consumption.

- Key Assumptions
  - Target overall reduction in total community energy use by 25%*
  - Implementation costs of $1 per square foot of building space impacted
- Implementation Actions
  - Funding and financing
  - Job training opportunities
  - Demand reduction strategies
  - Lobby and implement progressive building codes
  - Energy density mapping
  - Weatherization/Deep Energy Retrofits

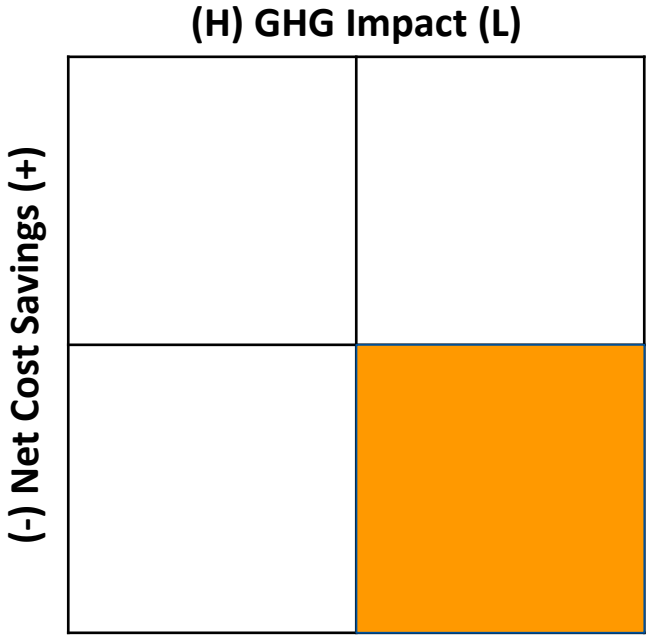


** NY State Energy Plan targets a 23% reduction in energy consumption in buildings from 2012 levels by 2030*

Renewable Energy

Reduce utility electric needs through the installation of distributed (rooftop and land) solar PV systems.

- Key Assumptions
  - Average system size:
    - Residential – 6 kW
    - Com/Ind – 10 kW
  - Reach 1% of customers annually*
  - Implementation costs of $3,700/kW installed; 5% annual decrease in cost
- Implementation Actions
  - Funding and financing
  - Job training opportunities
  - Community-owned electricity

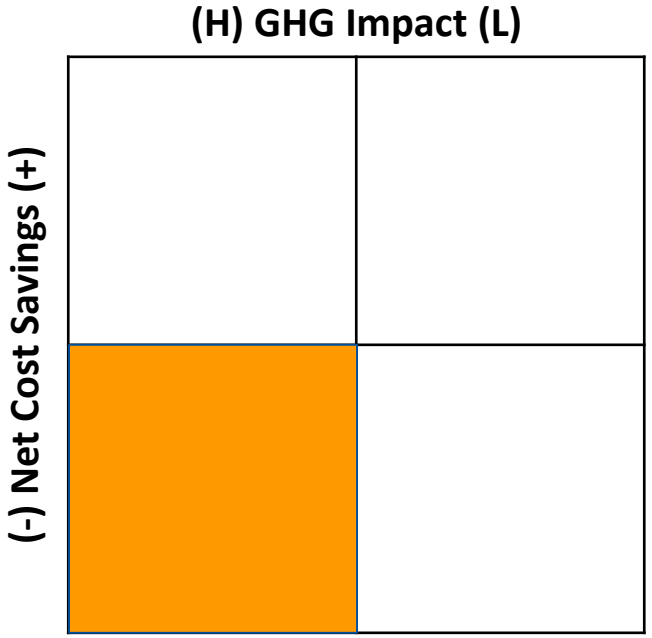


** NY State Energy Plan aims to have 50% of all state power coming from renewable sources by 2030*

Fuel Switching

Reduce natural gas needs through electric conversion of heating equipment and aim to supply the electricity consumption with renewable energy.

- Key Assumptions
  - First Cost: $710,000/MW converted
  - O&M Cost: $43,000/MW/year
  - Reach 1% of residential customers and 0.5% of com/ind customers annually
- Implementation Actions
  - Funding and financing
  - Job training opportunities
  - Lobby and implement progressive building codes



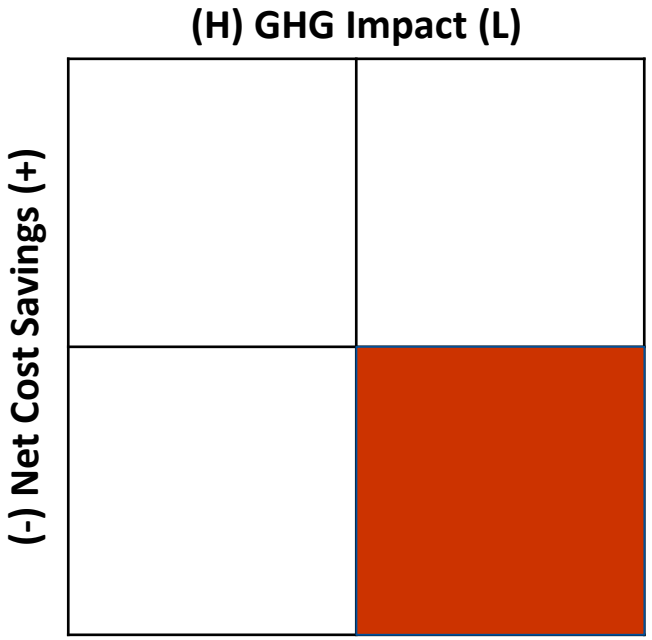
Energy and Climate Adaptation

- Energy price stability
- Energy supply flexibility
- Weather proof energy supply/infrastructure
- Cutting edge solar strategies
- Cooling credits
- Prioritize and incentivize use/maintenance of existing buildings

Multimodal Travel

Encourage alternative means to transportation within the community to reduce vehicle miles traveled.

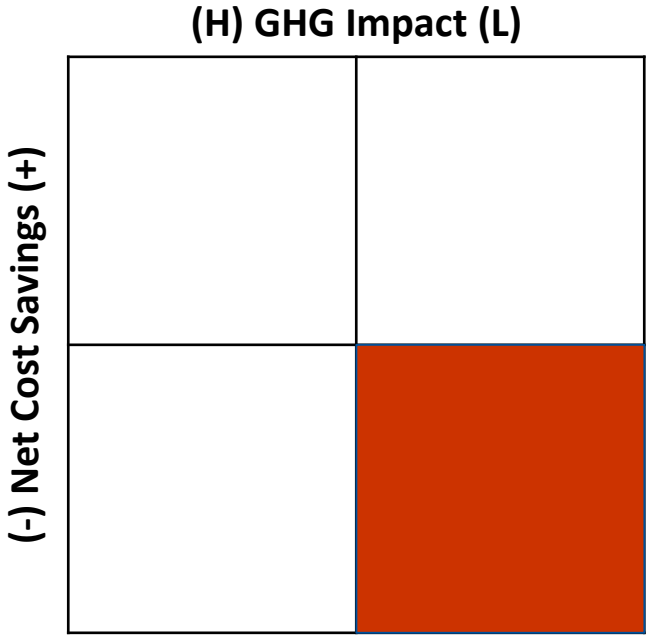
- Key Assumptions
  - Target overall reduction in vehicle miles traveled by 12%
  - Implementation costs of $0.75/mile reduced
- Implementation Actions
  - Create more shared mobility opportunities
  - Public awareness of programs and benefits of non-vehicle modes of transportation
  - Improve maintenance and safety of bike/ped facilities
  - Improve public transit system



Alternative Fuel Vehicles

Encourage the adoption of electric and other non internal combustion engine (ICE) vehicles.

- Key Assumptions
  - 10% of all new vehicle purchases annually are alternative
  - Alternative options reduce fuel consumption 35%
  - Incremental cost of $10,000; 7% annual decrease in incremental cost
- Implementation Actions
  - Increased use of automated and connected vehicles
  - Increased availability of car charging stations



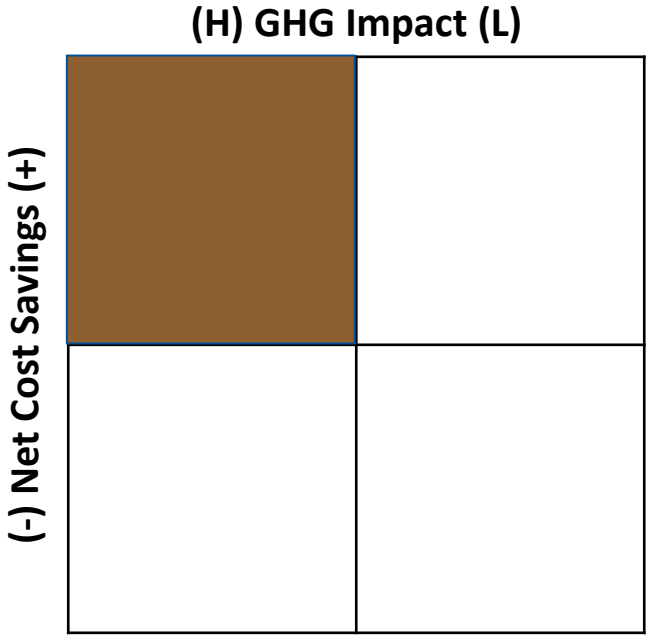
Transportation and Climate Adaptation

- Shifting availability and maintenance of trails
- Increased/monitoring and security of trails
- Transportation infrastructure (plan, design, construct)
  - Integrated with land use
  - Highly connected network that addresses distance/time
  - Availability of infrastructure in extreme events
- Re-emphasize/support a robust transit system
- Use alternative materials that are more durable and less heat-trapping than asphalt/pavement

Waste Reduction and Diversion

Reduce landfilled waste through a variety of reduction and diversion programs.

- Key Assumptions
  - Target diversion rate of 60%
  - Assumes a cost of $170/ton for recycling
- Implementation Actions
  - Improve existing recycling programs
  - Systemic organics collection, including public compost collection
  - Improve transparency in materials management and recycling laws
  - Plastic bag ban
  - Simplify and improve consumer return of universal wastes and electronics



Waste and Climate Adaptation

- Diversified industries (more sustainable industries)
- Education and outreach on emerging issues

Water and Climate Adaptation

- Regional cooperation for watershed management, leveraging and building upon existing watershed groups
- Improve water treatment capacity and redundancy
- Explore treatment alternatives and new treatment technologies
- Regionalize water supply coordination and diversification for redundancy in emergency situation
- Increase regulation of non-point source pollutants
- Increase and improve storm water management including green infrastructure

Land Use and Climate Adaptation

- Invest in land purchases and conservation easements
- Promote interaction/ exchange for seed/ plant banks and knowledge
- Increase open space in urban environment
- Adaptation of nurseries (different varieties, practices, outreach)
- Build upon the existing urban agriculture working group
- Green space protection

Cross-Cutting Strategies/Themes

- Education and Outreach
- Funding and Financing
- Targeted support for underserved communities
- Implementation at the neighborhood level e.g. Eco Districts

Implementation: Key Questions

- What is the timing and prioritization for identified strategies/actions?
- Who/What are good financing opportunities?
- Who are the identified responsible parties?
- Who else needs to be involved in implementing the strategies/actions?
- What outreach channels may be utilized?
- Are there any foreseeable barriers or challenges with implementation?

Example: Cleveland Climate Action Plan

- www.sustainablecleveland.org/resources/climate-action-plan/
- Organized by Focus Area (e.g. Energy Efficiency & Green Building)
- Focus Area Goals (e.g. By 2030, reduce residential and commercial energy and water use 50%, and industrial use by 30%)
- 1-page Overview and Key Facts for each Focus Area
- Summary of Objectives and Actions for each Focus Area (written and tabular)
- List of Focus Area Next Steps to be completed in first year of plan implementation
- Case studies and showcases of current success stories

FOCUS AREA 1

ENERGY EFFICIENCY & GREEN BUILDING

OBJECTIVE: RETROFIT AND RENOVATE EXISTING BUILDINGS

Since building energy use makes up more than 50% of the total GHG emissions for the City, making the existing building stock as efficient as possible is a top priority for the CAP.

ACTION 1: SUPPORT PROGRAMS AND POLICIES TO RETROFIT RESIDENTIAL BUILDINGS

2030 Emissions Reduction Potential: **430,000 $MTCO_2e$ = 32,000 Cleveland homes.**

There are great opportunities to significantly improve the energy efficiency of existing homes through improved insulation and air sealing, more efficient heating and cooling equipment, and efficient appliances and electronics. Efficient buildings reduce strain on power distribution systems, are more resilient to increasing utility costs, and are less affected by extreme weather events.

KEY BENEFITS OF ENERGY EFFICIENCY & GREEN BUILDING

- Cost savings
- Less risk from energy price volatility
- Increased property values & rental rates
- Reduction in energy poverty
- Healthier, more comfortable homes
- Local job creation and economic development
- Leadership and recognition
- Education and awareness

CLEVELAND ALREADY HAS SEVERAL EXISTING PROGRAMS TO BUILD ON, INCLUDING:

- Home Weatherization Assistance Program

ACTION 2: SUPPORT PROGRAMS AND POLICIES TO RETROFIT COMMERCIAL AND INDUSTRIAL BUILDINGS

Focus Area	Objective	Sectors	Climate Change Impact	Action	Annual Reduction Potential by 2030 (MT CO_2e/yr)
ENERGY EFFICIENCY & GREEN BUILDING Annual Emissions Reduction by 2030 = 2,100,000 MT CO2e (39% of total GHG reduction)	**Retrofit and renovate existing buildings**		M A	Action 1. Support programs and policies to retrofit residential buildings	430,000 8%
			M	Action 2. Support programs and policies to retrofit commercial and industrial buildings	1,300,000 24%
	Make green building the standard for all new construction		M A	Action 3. Incentivize new construction to exceed existing building codes	1,500 0.03%
	Implement neighborhood-level solutions		M	Action 4. Make utility data easily accessible for residents and businesses	n/a
			M	Action 5. Expand use of smart grid and advanced meter technologies	120,000 2%
			M	Action 6. Expand energy and green building challenges	290,000 5%
			M A	Action 7. Build on existing green school initiatives in the City	n/a
ADVANCED & RENEWABLE ENERGY Annual Emissions Reduction by 2030 = 2,100,000 MT CO2e (38% of total GHG reduction)	**Accelerate renewable energy use by Cleveland's residents and small businesses**		M A	Action 8. Increase distributed energy installations	35,000 0.6%
			M	Action 9. Incorporate renewable energy into municipal aggregation	340,000 6%
	Use local projects to help meet or exceed the utility renewable energy standards		M	Action 10. Become national leader in reusing vacant land for renewable energy projects	23,000 0.4%
			M	Action 11. Develop a pilot offshore wind farm	67,000 1%
			M	Action 12. Utilities invest in additional projects to meet renewable energy standards	1,100,000 20%
	Implement advanced energy technologies		M	Action 13. Accelerate conversion of organic waste to energy using anaerobic digestion	52,000 1%
			M	Action 14. Switch to low-carbon fuel sources for district heating and cooling systems	120,000 2%

ENERGY EFFICIENCY & GREEN BUILDING NEXT STEPS TO BE COMPLETED BY 2016:

1. Pursue efficient one-touch approach to low-income housing programs by layering healthy homes, lead, and weatherization programs. At the same time, research options for incentivizing low-income residents who do not pay utility bills to practice conservation.(1)
2. Build on the success of deep energy retrofit demonstrations by incorporating deep energy reduction principles in local rehabs and new construction, and continue to foster demonstrations that advance and disseminate advanced knowledge of energy efficiency. (1)
3. Expand on existing programs that have provided energy efficiency education and incentives through local community development organizations, including programs that provide home visits on low cost interventions such as weather-stripping and caulking. (1)
4. Promote education on identifying opportunity points for energy efficiency improvements throughout the life-cycle of the home, for example, when replacing a roof, doing foundation work, or replacing windows. (1)
5. Explore strategies to establish a permanent revolving fund for commercial and residential energy efficiency programs such as the Energy$aver program. (1)
6. Encourage all local utilities to make available the Home Performance with ENERGY STAR® Program to its customers. This program uses a whole-house approach to make any size or style of home more energy efficient, thus lowering energy costs. (1)
7. Review residential and commercial programs to determine which ones have the greatest impact. (1, 2)
8. Engage individuals and organizations involved professionally in energy efficiency in an organizational network that can collaborate in advocating for private, state, and federal funding for energy efficiency and for progressive energy efficiency policies. (1-7)
9. Complete pilot on-bill financing / repayment for commercial customers. If successful, create a program for other potential customers to utilize. (2)
10. Thoroughly explore the possibility of an energy benchmarking and disclosure policy in the City of

Climate Action Plan Outline

1) Introduction
2) Where Are We Now?
   - Baseline Snapshot
   - GHG Inventory
   - Climate Vulnerabilities
3) Where Do We Want To Be?
   - Emission Reduction Targets
   - Climate Response Targets
   - Alignment with other Initiatives
4) How Do We Get There?
   - Residential Perspective
   - Business Perspective
   - Local Government Perspective
5) Encouraging Implementation
   - Methods
   - Roles and Responsibilities
   - Timing
6) Monitoring Outcomes
   - Baseline Snapshot
   - GHG Inventory
   - Climate Vulnerabilities
7) Conclusions and Next Steps
   - Where do we go next?

Wrap-Up and Next Steps

- We will take input from this workshop to refine the identified strategies, tie identified goals to strategies, and take information to inform future implementation
- Workshop 3 (May 2016) will focus on strategy implementation, sharing strategy analysis results, and begin the conversation of tracking and monitoring progress.

Any parting thoughts?

THANK YOU!