CITY OF ROCHESTER: STAKEHOLDERS

External Stakeholders
- Rochester Gas & Electric/ Iberdrola
- Constellation Energy
- Genesee Transportation Council
- Rochester City School District
- Rochester District Heating Cooperative
- Friends of the Garden Aerial
- Center for Environmental Initiatives
- Rochester Institute of Technology Institute for Sustainability
- University of Rochester
- Rochester Genesee Regional Transportation Authority
- Genesee/ Finger Lakes Regional Planning Council
- Recycled Energy Development
- Monroe County

City of Rochester Staff
- Commissioner of Environmental Services
- Energy and Sustainability Manager
- City Engineer
- Manager of Environmental Quality
- Director of Planning and Zoning
- Transportation Specialist
- Environmental Planner
- Manager of Building Services
- HVAC Engineer
- Managing Architect
- Streetlight Program Coordinator
- Manager of Plan Review and Permits
- Assistant Director of Operations/Fleet Mgr.
## City Overview

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Area</td>
<td>35.78 sq. mi</td>
</tr>
<tr>
<td>Population</td>
<td>210,565</td>
</tr>
<tr>
<td>Daytime Population</td>
<td>271,268</td>
</tr>
<tr>
<td>Median HH Income</td>
<td>$29,942</td>
</tr>
</tbody>
</table>

*Source: ACS 2010-2012*
**CITY OF ROCHESTER: BASELINE ASSESSMENT**

### City Plans
- City of Rochester Greenhouse Gas Emissions Inventory for the Baseline Year of 2008 (2011)
- City of Rochester Municipal Operations Climate Action Plan (2013)
- Rochester Bicycle Master Plan (2011)
- Community Climate Action Plan (NYSERDA CGC)
- Finger Lakes Regional Sustainability Plan (2013)
- Long Range Transportation Plan for the Genesee-Finger Lakes Region 2035 (2011)

### Renewable Energy
- Renewable energy certificates purchased
- Geothermal at Riverside Cemetery
- PV at Arnett Library, Public Market
- Feasibility study for solar at former landfill

### Energy Efficiency
- Energy Audits at City-owned facilities
- Established Office of Energy and Sustainability
- Permitting/zoning updates for PV, EV charging
- Portfolio Manager to track energy usage
- Streetlight upgrades
- US DOE Better Buildings Challenge
- Building envelope improvements
- Upgrade HVAC systems
- Energy management systems

### Transportation
- Greening fleet
- Bicycle/pedestrian infrastructure
- Green fuel station/EV charging stations
Energy Consumption Overview (mmBtu)

- Transportation
- Industrial Buildings
- Institutional Buildings
- Commercial Buildings
- Multifamily Buildings
- 1-2 Family Homes
CITY OF ROCHESTER: BASELINE ASSESSMENT

Greenhouse Gas Emissions Overview (CO$_{2e}$)
CITY OF ROCHESTER: BASELINE ASSESSMENT

Breakdown of Citywide Energy Consumption

By End User
- 1-2 Family Homes: 19%
- Multifamily Residential: 35%
- Commercial: 19%
- Industrial: 15%
- Institutional: 7%
- Transportation: 5%

By Fuel Source
- Electricity: 49%
- Natural gas: 13%
- Gasoline: 29%
- Diesel: 5%
- #2 Fuel Oil: 1%
- #6 Fuel Oil: 1%
- Propane/Butane: 1%
- Coal: 1%
CITY OF ROCHESTER: BASELINE ASSESSMENT

Breakdown of Municipal Energy Consumption

By End User
- Library: 27%
- Parking: 10%
- Parks & Recreation: 12%
- Police/ Fire: 11%
- Water Bureau: 12%
- Street lighting, misc.: 18%

By Fuel Source
- Electricity: 30%
- Natural gas: 17%
- Gasoline: 23%
- Diesel: 10%
- Fuel Oil: 18%
- Steam: 1%
- Propane/Butane: 1%
CITY OF ROCHESTER: BASELINE ASSESSMENT

Existing Electric Transmission Lines and Substations

LEGEND

- Substation
- Transmission
  - 115 KV
  - 34.5 KV

IBERDROLA USA

Rochester, NY (City Area)

BuildSmartNY

Five Cities Energy Master Plans

Albany • Buffalo • Rochester • Syracuse • Yonkers
CITY OF ROCHESTER: BASELINE ASSESSMENT

Planned Electrical Transmission System Upgrades
CITY OF ROCHESTER: BASELINE ASSESSMENT

Existing Natural Gas Transmission Mains

Gas Transmission Mains and Purchase Points
NYSEG and RG&E

Legend

- Gas Transmission Pipelines

NATIONAL PIPELINE MAPPING SYSTEM

NYSEG Gas
RG&E Gas
NYSEG Transmission
RG&E Transmission

Purchase Point
• Gate Station
• Town Border Station
CITY OF ROCHESTER: BASELINE ASSESSMENT

Energy Generation and Combined Heat/Power

- ▲ Combined Heat/Power
- ★ District Heating (steam)
- ● RG&E Hydro-Electric
CITY OF ROCHESTER: EXISTING GOALS

Existing goals

- Better Buildings Challenge: Reduce municipal building energy usage by 20% from 2009 baseline by 2020
- Municipal Climate Action Plan Target: reduce greenhouse gas emissions 20% from 2008 baseline by 2020
Other key findings

- Cost-effective opportunities to reduce energy use at City facilities (lighting fixtures and controls; high efficiency equipment drives; building envelope sealing; operating sequences during unoccupied times)
- Sound management and decision-making procedures have resulted in cost savings and strategic investment in energy efficiency and renewable energy projects
- Opportunities to expand district heating downtown, possibly to include electricity generation
- Opportunities for additional cost savings through ESCOs and performance contracts
- Opportunities to use more clean fuels in municipal and community fleets.
CITY OF ROCHESTER: PRELIMINARY RECOMMENDATIONS

Planning and Coordination
- Procure natural gas through ESCO
- Consider collaboration to leverage lower energy prices
- Continue tracking building energy performance

Energy Distribution and Supply
- Reduce fugitive emissions from natural gas pipelines
- Support Existing District Energy
- Facilitate new/expanded district energy and micro-grids
- Facilitate installation of renewable energy
- Improve/extend natural gas infrastructure

Transportation
- Improve bicycle and pedestrian infrastructure
- Incentivize/promote clean fuel vehicles (City and other fleets)
- Create pilot anti-idling program for City fleets
- Institute travel demand management strategies
- Promote alternative modes for commuting by City employees
- Replace Street lighting with LEDs/Reduce street lighting

Buildings
- Implement measures recommended in energy audits
- Create guidebook and rewards for city employees best practices
- Engage commercial property managers, homeowners, tenants
- Streamline approvals
**City of Rochester: Preliminary Recommendations**

### Planning and Coordination

**Goal:** Reduce cost, improve efficiency and ensure sufficient supply of energy

<table>
<thead>
<tr>
<th>Initiatives</th>
<th>Type</th>
<th>Timeframe</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procure natural gas through ESCO</td>
<td>Competitive bidding</td>
<td>Short</td>
<td>ESCOs</td>
</tr>
<tr>
<td>Consider collaboration to leverage lower energy prices</td>
<td>Partnership</td>
<td>Medium</td>
<td>Monroe County, City School District</td>
</tr>
<tr>
<td>Continue tracking building energy performance</td>
<td>Staff assignment</td>
<td>On-going</td>
<td>Building managers</td>
</tr>
</tbody>
</table>
Planning and Coordination – Key Challenges

- Consolidation of ESCOs reduces competition and raises costs
- Differing energy needs, priorities and approaches among organizations
- On-going monitoring requires staff time to enter and check data
**CITY OF ROCHESTER: PRELIMINARY RECOMMENDATIONS**

## Energy Distribution and Supply

**Goal:** Improve and expand infrastructure to ensure sufficient capacity for economic development and minimize greenhouse gas emissions

<table>
<thead>
<tr>
<th>Initiatives</th>
<th>Type</th>
<th>Timeframe</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce fugitive natural gas emissions</td>
<td>Legislation/Regulations</td>
<td>Long</td>
<td>NYS Legislature; PSC</td>
</tr>
<tr>
<td>Support Existing District Energy</td>
<td>Partnership</td>
<td>On-going</td>
<td>RDHC, RED, PSC, RG&amp;E</td>
</tr>
<tr>
<td>Facilitate new/expanded district energy and micro-grids</td>
<td>Legislation/Regulations</td>
<td></td>
<td>PSC, RG&amp;E, Universities, RED</td>
</tr>
<tr>
<td>Lead/facilitate installation of renewable energy</td>
<td>Capital / regulations</td>
<td>Medium</td>
<td>RG&amp;E, property owners</td>
</tr>
<tr>
<td>Improve/extend natural gas infrastructure</td>
<td>Capital investment</td>
<td>Short</td>
<td>RG&amp;E, PSC</td>
</tr>
</tbody>
</table>
CITY OF ROCHESTER: PRELIMINARY RECOMMENDATIONS

Energy Distribution and Supply – Key Challenges

- Although the NYS Energy Highway Blueprint policy supports microgrids in concept, PSC and Public Service Law regulations are complex and unclear
- Lack of regulatory consistency increases the cost of solar installations
- Code revisions require legislative action by City Council
- High initial cost; long pay-back for renewable energy
- Evolving technologies
- Physical challenges in improving natural gas capacity at key sites
# Transportation

Goal: Reduce petroleum dependence and greenhouse gas emissions from vehicles.

<table>
<thead>
<tr>
<th>Initiatives</th>
<th>Type</th>
<th>Timeframe</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve bicycle and pedestrian infrastructure/support transit</td>
<td>Capital</td>
<td>Short/Ongoing</td>
<td>RGRTA, GTC</td>
</tr>
<tr>
<td>Incentivize/promote clean fuel vehicles</td>
<td>Capital</td>
<td>Medium</td>
<td>Government/private fleets</td>
</tr>
<tr>
<td>Institute travel demand management strategies</td>
<td>Program/Behavior</td>
<td>Short</td>
<td>Downtown employers</td>
</tr>
<tr>
<td>Create pilot anti-idling program</td>
<td>Program</td>
<td>Short</td>
<td></td>
</tr>
<tr>
<td>Promote alternative modes for commuting by City employees</td>
<td>Program/Behavior</td>
<td>Short</td>
<td>RGRTA</td>
</tr>
<tr>
<td>Replace Street lighting with LEDs/Reduce street lighting</td>
<td>Capital/Policy</td>
<td>Medium</td>
<td>RG&amp;E/PSC</td>
</tr>
</tbody>
</table>
CITY OF ROCHESTER: PRELIMINARY RECOMMENDATIONS

Transportation – Key Challenges

- Limited funds for to improve bicycle/pedestrian infrastructure improvements. Limited staff to manage improvement projects.
- Need for each party to understand the advantages; political barriers
- Higher cost of clean-fuel vehicles
- Entrenched behaviors difficult to change.
- Limited transit routes and schedules.
- Organizational culture and employee attitudes
- Insufficient alternative-fuel stations
### Buildings

**Goal:** Increase energy efficiency of municipal and community buildings

<table>
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<th>Timeframe</th>
<th>Partners</th>
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</thead>
<tbody>
<tr>
<td>Implement measures recommended in energy audits</td>
<td>Capital/Behavoir</td>
<td>Short-Medium</td>
<td>ESCO, NYPAA, NYSERDA</td>
</tr>
<tr>
<td>Create guidebook and rewards for city employees best practices</td>
<td>Program/Behavior</td>
<td>Short</td>
<td></td>
</tr>
<tr>
<td>Engage commercial property managers, homeowners, tenants</td>
<td>Program</td>
<td>Short</td>
<td>Business/real estate orgs.</td>
</tr>
<tr>
<td>Streamline approvals</td>
<td>Permitting</td>
<td>Short</td>
<td>NYSERDA</td>
</tr>
</tbody>
</table>
Buildings – Key Challenges

- Staffing
- Prioritizing a large number of ECMs from multiple buildings
- Standardizing fixtures, drives
- Employee buy-in