

Technical Support for Integrated Community Energy Solutions

Presentation to

Metropolitan Washington Council of Governments

Climate, Energy and Environment Policy Committee

July 27, 2011



with support from



Technical Support for Integrated Energy Solutions

Task 1: Integrating Energy into Local Regulations & Programs

- General Policy Frameworks
- Land Use and Community Energy Planning
- Establishing Community Energy Systems (franchising, siting, permitting, tax incentives, financial assistance)
- Building Compatibility (zoning, building codes, review of building plans, energy performance labeling, compatibility standards)
- For each category above:
 - Existing MWCOG Region Provisions
 - Experience in Other Locations
 - Best Practice Recommendations

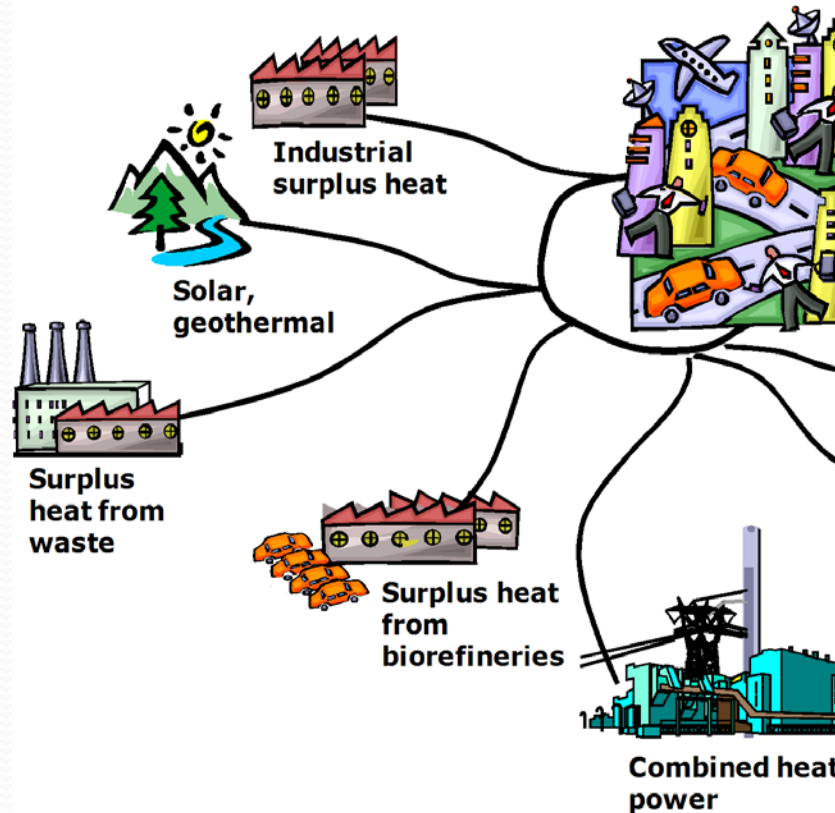
Task 2: Development of Cost Benefit Information and Business Case for Integrated Community Energy Solutions

- Overview of Clean Energy Technology Options
- Costs and Benefits
- Implementation Challenges
- Ownership and Operation Models



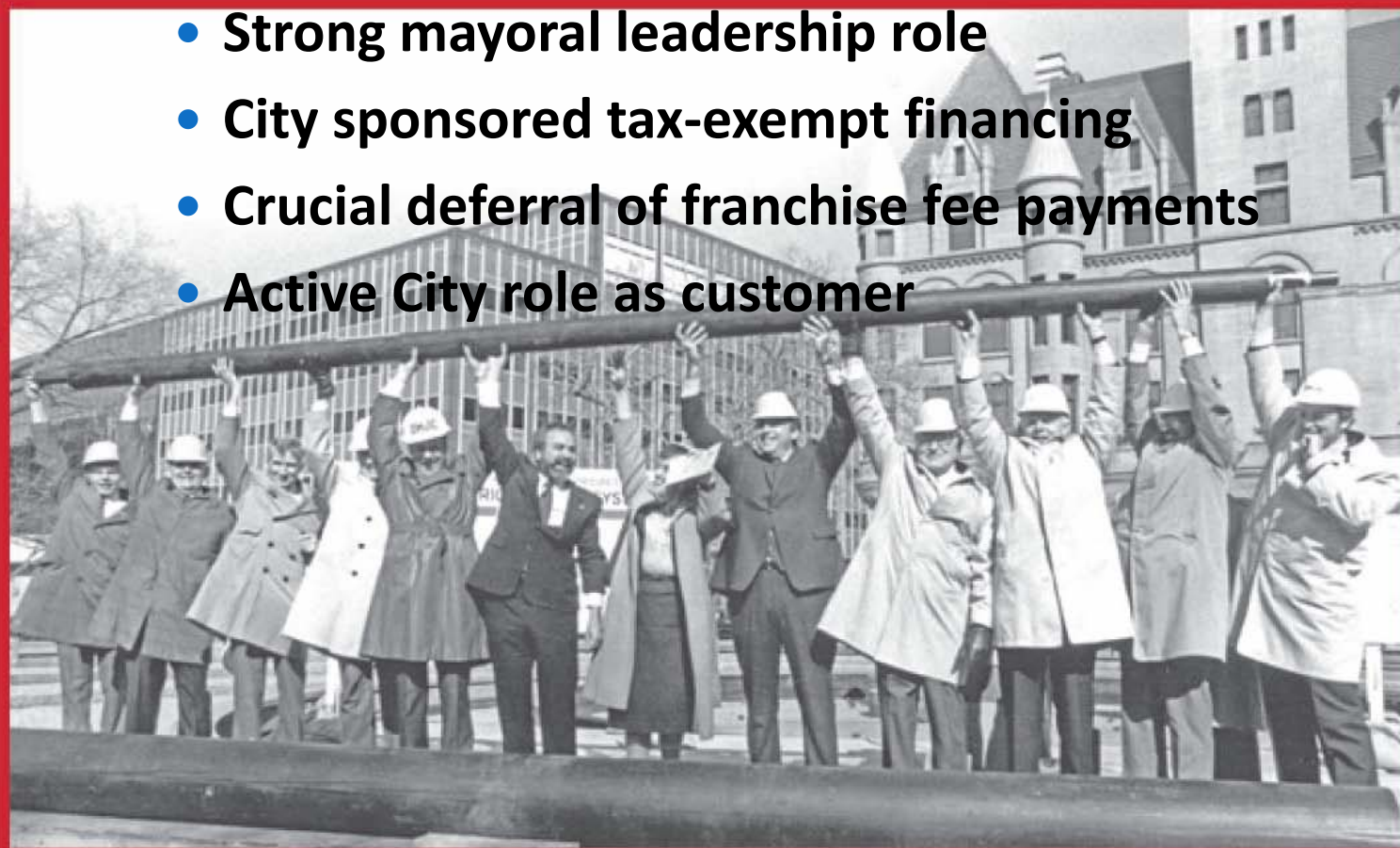
Challenges

- Awareness/Information
- Leadership
- Capital Costs
- Price Signals
- Land Use
- Siting
- Grid Access
- Lack of Integrated Planning



Successful Examples – St. Paul

- **Strong government role**
 - DOE/HUD funding for studies & engineering
 - Strong mayoral leadership role
 - City sponsored tax-exempt financing
 - Crucial deferral of franchise fee payments
 - Active City role as customer



1983

Successful Examples – St. Paul

- Hot water district heating
 - Swedish hot water design, replaced aging steam system
 - Now operating for over 30 years
 - Over 80% market share downtown
- District cooling started in 1992
 - Electric and absorption chillers
 - Multiple chilled water storage tanks
- Biomass CHP
 - 25 MWe sold to grid
 - Fuelled by urban waste wood
- Solar thermal 1.0 MWth



Successful Examples – Markham

Local government motivation

- Town motivated to create a district energy system
 - Power outage from ice storm illustrated downside of outside dependence
 - Was actively trying to attract hi-tech industry to the community
 - Community energy system seen as advantage by ensuring highly reliable, efficient and economical energy
- Proved to be the added edge that was needed to convince IBM, Motorola and other firms to locate in a new mixed development called Markham Centre
 - Mid-rise, mixed-use, pedestrian-oriented and transit supportive downtown
 - Projected to ultimately be home to 41,000 residents and 39,000 employees

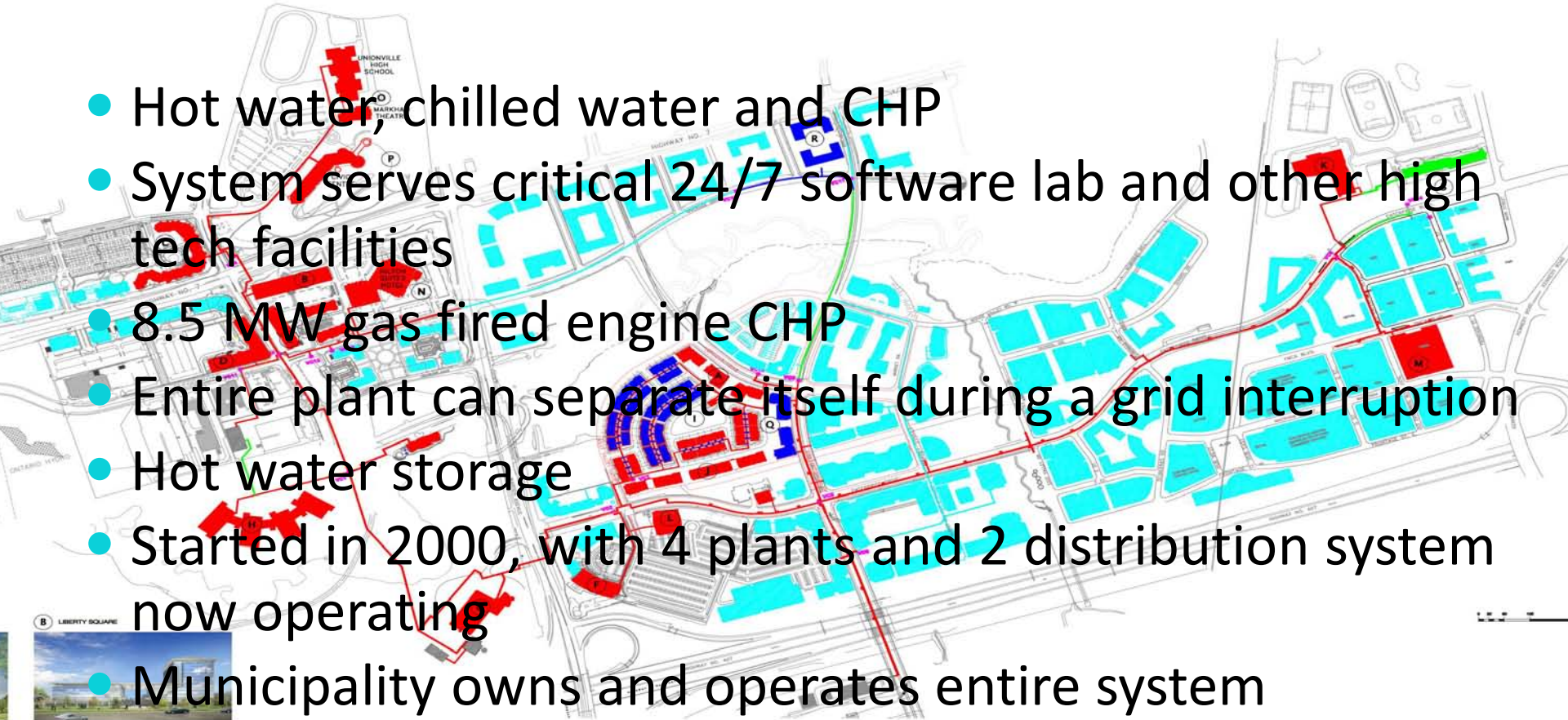
Successful Examples – Markham

Strong local government role

- Planning for Markham Centre began in the early 1990's
- Town adopted 11 “Guiding Principles” for the development of Markham Centre
 - Performance Measures were developed from the Guiding Principles
 - Developers must respond to the Performance Measures, which encourage connection to district energy
 - Markham Centre Advisory Group worked with Town staff to ensure that implementation plans for Markham Centre adhere to the principles
 - Connection to the district energy system is not mandatory
 - Yet all major developments in Markham Centre are connected
- District energy service is seen as
 - economically competitive tool for achieving sustainability
 - means of reducing development costs
 - strategy for speeding approval of development plans
- District energy rates are not regulated

DELIVERING A SUSTAINABLE ENERGY FUTURE TO MARKHAM CENTRE

- Hot water, chilled water and CHP
- System serves critical 24/7 software lab and other high tech facilities
- 8.5 MW gas fired engine CHP
- Entire plant can separate itself during a grid interruption
- Hot water storage
- Started in 2000, with 4 plants and 2 distribution system now operating
- Municipality owns and operates entire system
- Currently serves over 8 Million sqft of building space



Task 1 -- Recommendations

- Set goals for energy efficiency and GHG reductions
- Conduct an Opportunity Assessment to identify high-priority nodes for potential CES by mapping:
 - Areas with high existing or future thermal loads
 - Potential energy sources
 - Existing energy infrastructure
 - Scheduled infrastructure capital improvement projects
- Convene key stakeholders
- Create Integrated Energy Master Plans (IEMPs) for promising nodes

Task 1 – Recommendations (cont.)

- Identify and evaluate your government's preferred role
- Identify and cultivate champions
- Establish Working Group to coordinate and streamline policies, activities and decision-making
- Create clear permitting approach to plant site selection and distribution system routing
- Develop model franchise agreement
- Consider franchise fee repayment deferrals

Task 1 – Recommendations (cont.)

- Consider property tax relief to encourage connection
- Evaluate and modify zoning to encourage density and to allow for construction of plant near to the load
- Consider density bonuses as incentive to connect
- Develop building compatibility standards
- Ensure that Energy Performance Labeling system recognizes efficiency benefits of a CES
- Lead by example by connecting your buildings