

Energy Planning & Cities: San Francisco



SF Environment

Our home. Our city. Our planet.

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Energy Provision in SF



- **SF Public Utilities Commission**

(SFPUC): Water & Power from Hetch Hetchy

- Municipal electricity (city departments, schools, airport, etc.)
- City-wide water service

→ Municipal Utility (public, not for profit)

- **PG&E: Gas & Power**

- Private sector electricity (residential, commercial, industrial)
- City-wide natural gas

→ Independently Owned Utility (private, shareholder driven)

Guiding Energy Policies in SF

- SF Climate Action Plan (2004)
 - Goal:
 - Reduce greenhouse gas emissions by 20% below 1990 levels by 2012
- SF Electricity Resource Plan (2002)
 - Goals:
 - Maximize Energy Efficiency
 - Develop Renewable Power (50 MW by 2012)
 - Assure Reliable Power
 - Support Affordable Electric Bills
 - Improve Air Quality and Prevent Other Environmental Impacts
 - Support Environmental Justice
 - Promote Opportunities for Economic Development
 - Increase Local Control Over Energy Resources
- SF General Plan: Environmental Plan Element
 - Energy goals:
 - More Efficient Use of Energy
 - Balance of Energy Supplies to Meet Local Needs
 - Economic Development
 - Responsible Community Participation
 - Energy Objective Areas:
 - Municipal
 - Residential
 - Commercial
 - Transportation
 - Alternate Energy
 - Intergovernmental
 - Financing

Renewable San Francisco

Goal: 100% Renewable Energy

Current: 10 MW CEC AC-Capacity (2,073 PV installs)

Interim goal: 50 MW in-city renewables by 2012

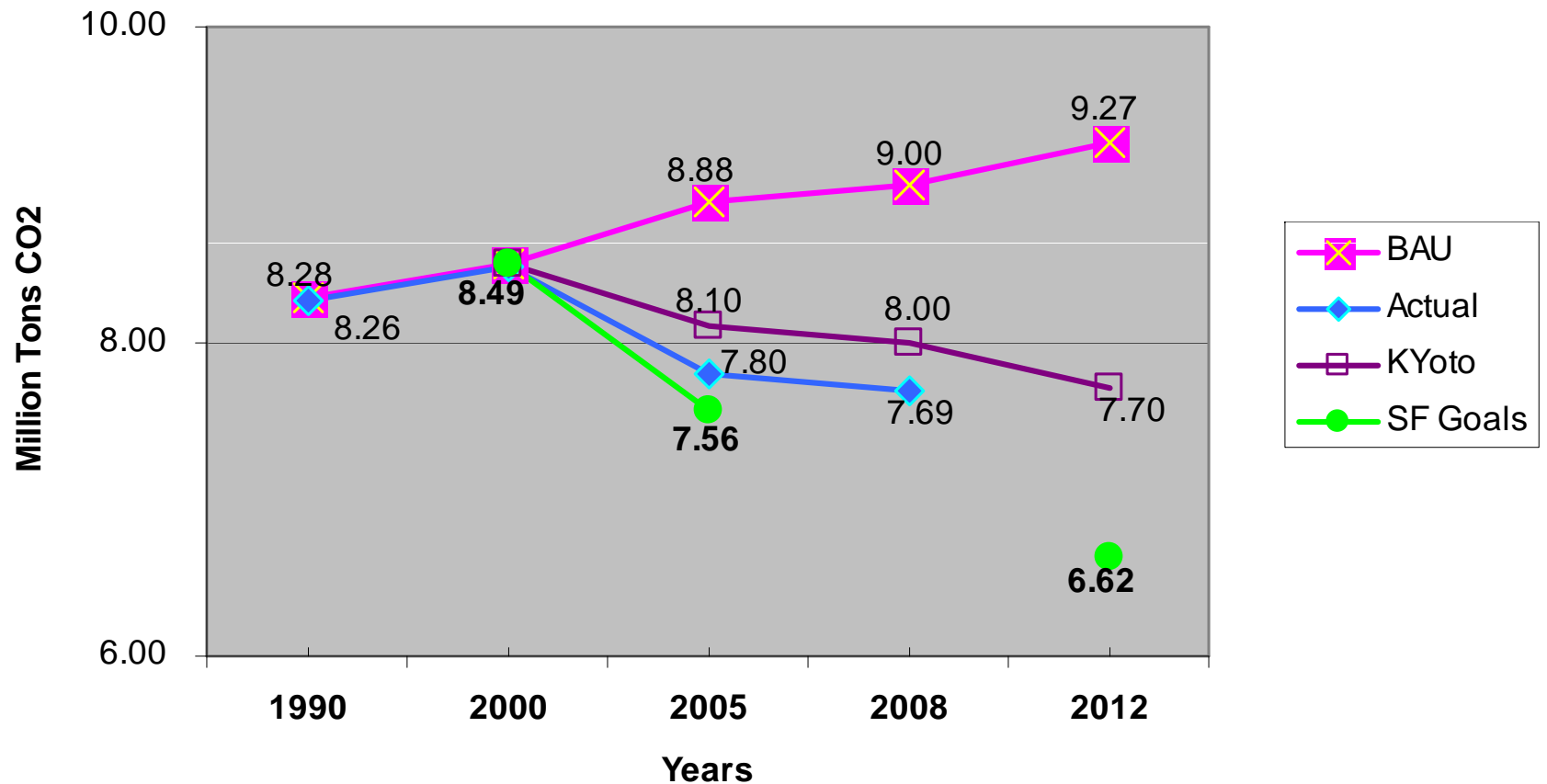
SF peak demand: 1100 MW



Carbon-Free / Renewable SF Plan

- Inventory: where are we at in terms of energy use and GHG emissions?
- What are the actionable steps we can/need to take to get to zero?
- How quickly can we get there?
- What can the City control?
(encourage/incent/mandate?)
 - Role of different departments, incl: SFE, SFPUC, DBI, Planning, OEWD, MUNI, DPW, Public Health, Parks & Rec, General Services Agency
- What needs support from utilities, regional, state, and/or federal gov't?

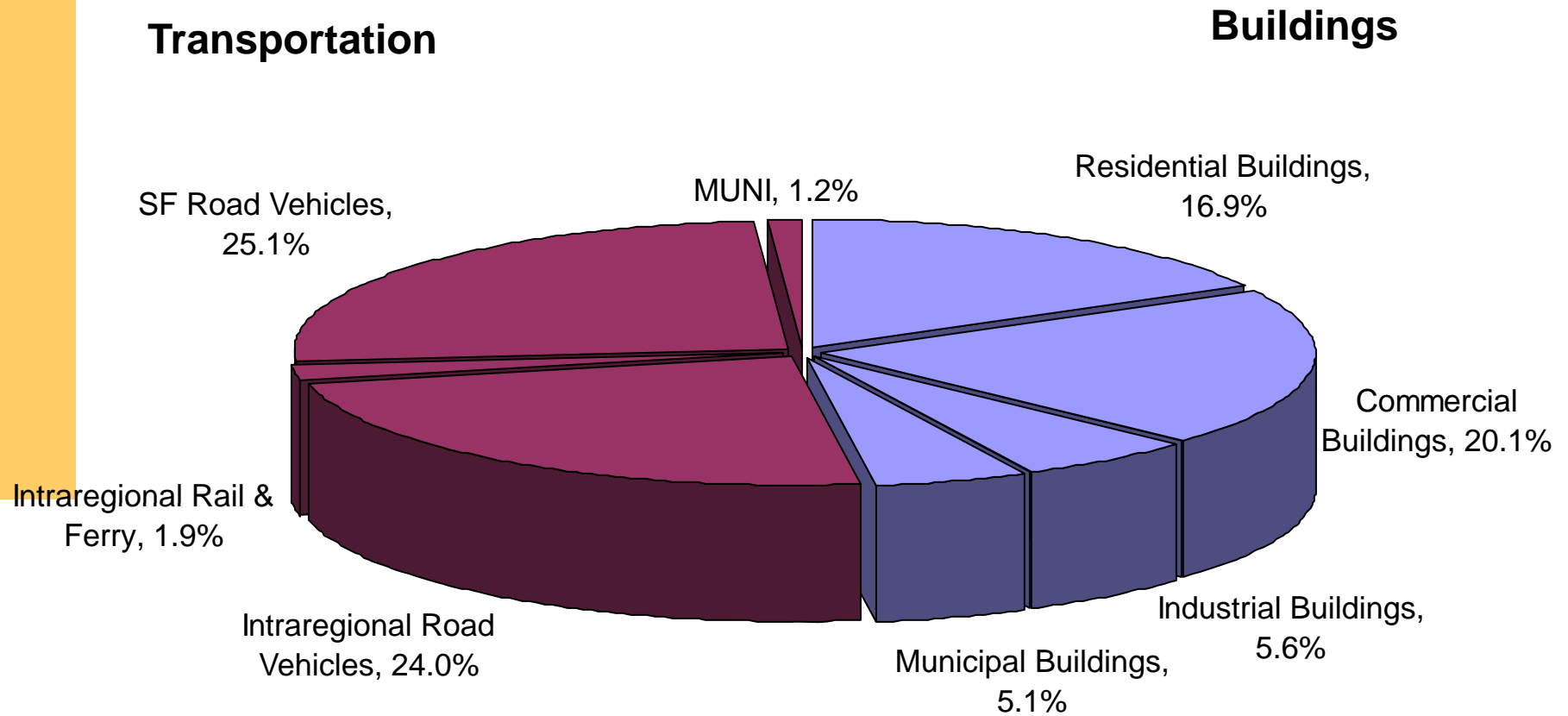
SF Climate Goals & Forecasts: BAU, Kyoto, SF & Actual



SF Goal: 20% below 1990 by 2012

Already exceeded Kyoto targets

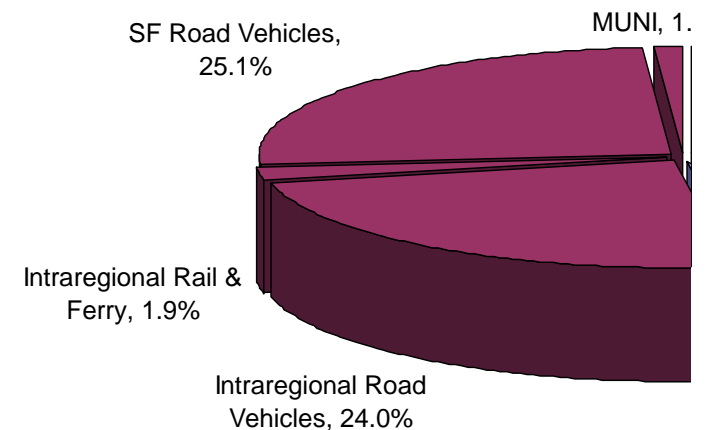
San Francisco GHG Emissions (2008)



**Total = 7.89 MT;
9.68 tons/capita**

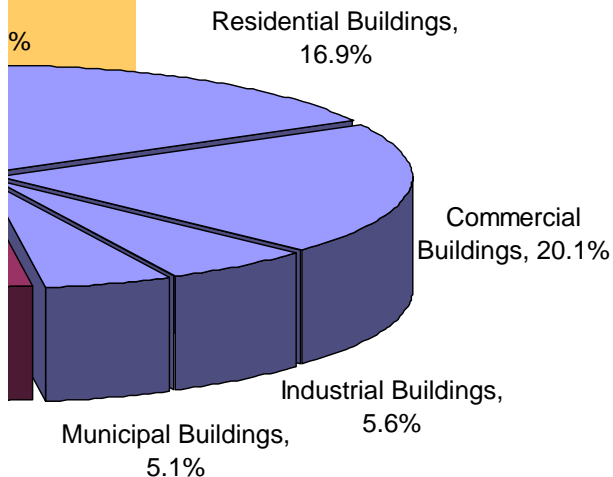
Transportation Energy & Emissions

- Improved vehicle design/technologies and fuel efficiency
- Switching to lower-carbon fuels
- Reducing VMTs
 - Increase transit use, walking & biking
 - Mixed development, TOD, increased density
- Increasing vehicle occupancy
- Road/congestion pricing
- Reducing material in/outputs



Building Energy Use

- Improve efficiency or reduce need for:
 - Heating & Cooling
 - Water Heating
 - Lighting
 - Appliances and Plug Loads



- Generate Energy On-Site
 - Solar PV & Water Heating
 - Wind Power
 - Fuel Cells & Co-gen

Municipal Energy Use & Generation

- Buildings/Facilities
- City Fleet, Transit, and Street Lights
- Water and Wastewater
- In-City Electricity Generation

Municipal Building Energy Use

- Buildings & Facilities
(SFPUC, GSA: Real Estate, Convention Facilities)
 - Heating/Cooling
 - Lighting
 - Plug Loads

Programs



- Municipal Energy Efficiency program, Resource Efficient Building Ordinance and Green Building Standard
- Departmental Climate Action Plans (CAPs)

Transportation

- City Fleet (GSA Fleet Mgmt, DPW)
 - Electric, NG, and Hybrid Vehicles
 - Right-sizing fleet and Car Share
 - Mode switching: Transit Use, commuter benefits
- Public Transit (MUNI, MTA)
 - Electric Vehicles
 - Biodiesel Buses
- Traffic and Street Lights (DPW, SFPUC, PG&E)
 - LED Traffic Lights
 - LED Street Light Replacement
 - Wind and solar street lights



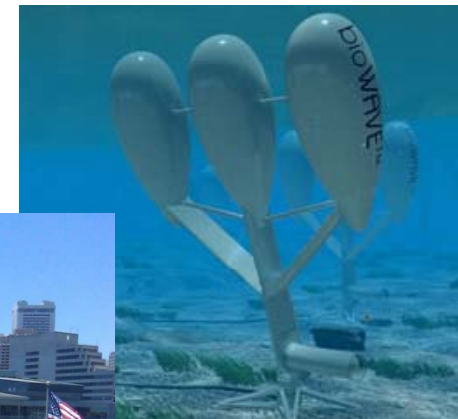
Water & Wastewater



- Water Supply (SFPUC)
 - Pumping energy
 - Electricity Generation at Hetch Hetchy Programs
 - Improving system efficiency: Water System Improvement Program
 - Reducing potable water use: Retrofit on Resale, Water-Wise evaluations and kits, high-efficiency toilet rebates, residential clothes washer rebates, rainwater harvesting
- Wastewater Treatment (SFPUC)
 - Energy for water treatment
 - Biodigesters and Biogas collection Programs
 - Wastewater reduction: greywater reuse / recycled water projects
 - Grease collection & biodiesel program

Electricity Generation

- In-City Electricity Generation (SFPUC, SFE, Planning DBI)
 - Solar
 - Wind
 - Wave
 - Fuel Cells
 - Cogen



Programs

- CleanPowerSF (CCA)
- Wave Power Pilot Program
- Municipal Solar Installs, PPA financing

Private Sector Energy Use & Distributed Generation

- Residential Buildings
- Commercial Buildings
- Transportation & Land Use
- Distributed Generation

Building Energy Use

- Residential & Commercial Buildings (SFE, Planning, DBI)
 - Heating & Cooling
 - Water Heating
 - Lighting
 - Plug Loads and Appliance Efficiency



Programs

- Net Zero Homes and Net Zero for Commercial
- Residential Green Building Resolution (endorses California Model Green Home Building Guidelines)
- Solar America Cities: Residential SWH outreach
- Green Building Ordinance, LEED Gold priority permitting
- SF Energy Watch
- Boiler Replacement Program



Transportation & Land Use

- Transportation & Land Use (Planning, Redevelopment Authority, MTA, Public Health, SFE)
 - Density: impact on transportation, heating/cooling
 - Personal Vehicle Use
 - Electric Vehicles
 - Hybrid Vehicles
 - Conventional Vehicles
 - Public Transportation Use
 - Walk/Cycle



Programs

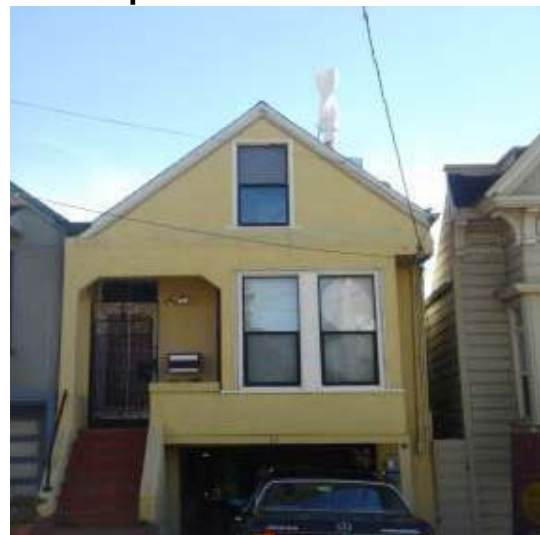
- Better Neighborhoods Program (TOD)
- Bike Plan
- EV Charging
- Carpooling incentives

Distributed Generation

- Distributed Generation (SFE, SFPUC, PG&E)
 - Solar
 - Wind
 - Fuel Cells and Co-gen

Programs

- Go Solar SF
- Solar Map, Wind Map
- Solar America Cities
- PACE...



Urban Energy Planning: Takeaways

- Requires a strategic, comprehensive approach
- Requires united, coordinated effort across City dept's, gov't agencies, private sector
- Set an example
- Be bold



Thank You



SFEnvironment

Our home. Our city. Our planet.

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Resources

SF General Plan:

www.sf-planning.org/ftp/general_plan/I6_Environmental_Protection.htm

SF Climate Action Plan:

www.sfenvironment.org/downloads/library/climateactionplan.pdf

SF Electricity Resource Plan:

www.sfenvironment.org/downloads/library/1_planreviseddecember2002pdf.pdf