

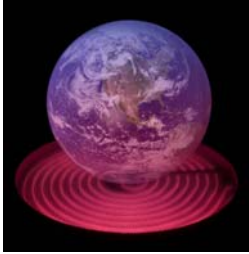





CITY OF IRVINE 2020 CLIMATE ACTION PLAN (CAP) PROCESS

May 12, 2009




Chronological Background for Drivers of Change

- Assembly Bill 32 (2006)
 - California Air Resources Board
- Senate Bill 97 (2007)
 - Office of Planning and Research
- Senate Bill 375 (2008)
 - Southern California Association of Governments

City's Energy Plan




- City Council Approved in July, 2008
- GHG inventory to be completed in 2009
- Four key goals:
 - Involve 100% of Irvine residents and businesses
 - Reduce energy use in buildings City-wide 30% by 2015 compared to 2003 levels
 - + % of renewable energy used in new buildings City-wide to 40% by 2015 and to 60% by 2020;
 - Reduce emissions to 2000 levels by 2010, to 1990 levels by 2020 and to 80% below 1990 levels by 2050.

http://www.cityofirvine.us/files/2008_June_24_Energy_Plan_FINAL.pdf

Purpose of Irvine CAP

- Build on adopted City Energy Plan
- Establish reliable quantified tool for future project review
- CEQA Tiering
- Future land use and transportation planning for build out

City Goals




- City-wide greenhouse gas (GHG) inventory
- GHG Emissions Reduction Target and Plan
 - Segregate by building sector and transportation
- Develop GIS tool to measure & track cumulative reduction to achieve City's GHG Goals (i.e. 30% reduction from 1990 levels)





Unique Elements of Irvine CAP

- Community-wide Targets while able to examine at Planning Area level
- Ability to prioritize projects
- Relationship between data and reality
- Stakeholder involvement
- Web-based monitoring and verification

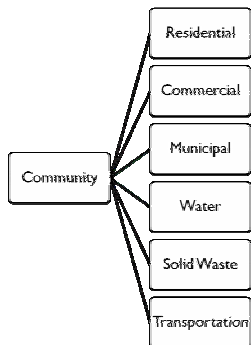
Irvine's Process

- Bringing ICLEI database down from regional to Irvine-specific:

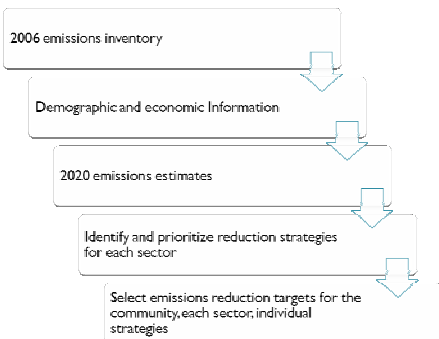
- Transportation
- Water
- Utilities



Irvine Emissions Sectors



Irvine CAP Development



Irvine CAP Six-Step Process

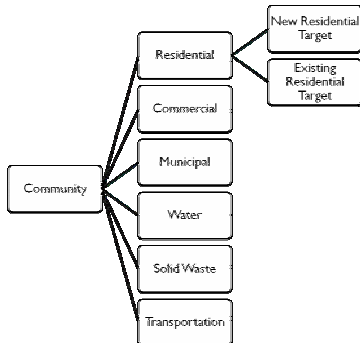


Step 1: Identify Emissions

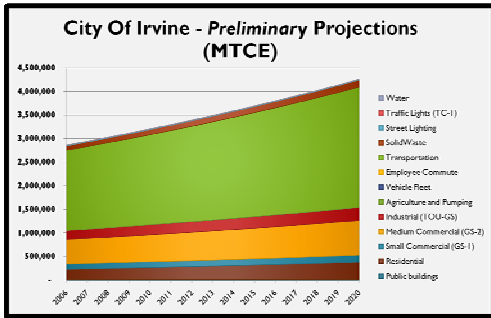
- Data collection can be a challenge the first time
- The uncertainties in data will serve as a roadmap for future monitoring and verification plans



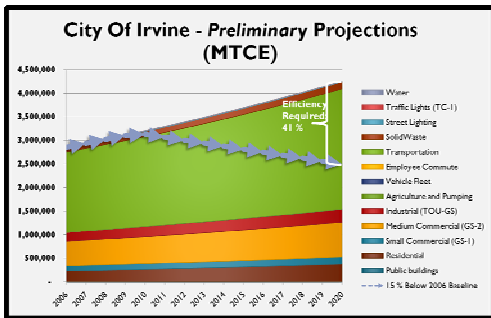
CAP Targets by Sector



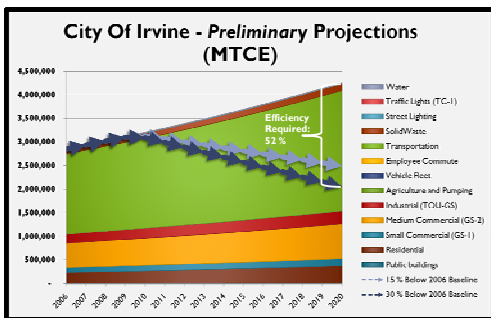
Irvine Projections – Business As Usual



Irvine Projections – 15 % Below 2006



Irvine Projections – 30 % Below 2006



Elements of the Irvine CAP

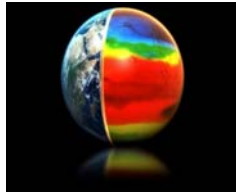
Emissions reduction strategies include:

- Actions that can reduce emissions in a sector or sub-sector
- Address all or part of emissions in a sector
- Applied over some time schedule between now and 2020



Actionable Information

- Most communities focus on municipal or community-wide emissions
- The City of Irvine makes critical decisions with respect to projects in individual planning areas
- **Need to integrate data at the planning area level to support project evaluation**



Spatial Assessment Protocol

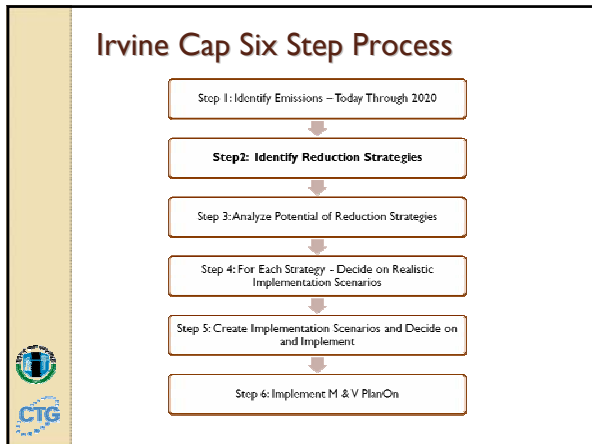
The CAP will be disaggregated from the community-wide scale to 50+ individual planning areas:

- Planning area-specific growth scenarios
- Potentially planning area-specific targets for growth and existing land use
- Planning area specific monitoring and reporting



Source: City of Irvine, August 8, 2008
Northern Planning Area GIS
City of Irvine Planning Areas





Step 2: Identify Reduction Strategies


Greenhouse Gas Emissions Reduction Measures

Category	Strategies and Practices	Implementing Entity	Cost		Reductions		Time to Implement
			High	Low	High	Low	
Land Use & Community Design	<p>Use of the Irvine Master Plan to guide development and land use decisions. The Master Plan provides a framework for development and land use decisions that are consistent with the City's vision and goals. The Master Plan also provides a framework for development and land use decisions that are consistent with the City's vision and goals.</p> <p>Use of the Irvine Master Plan to guide development and land use decisions. The Master Plan provides a framework for development and land use decisions that are consistent with the City's vision and goals. The Master Plan also provides a framework for development and land use decisions that are consistent with the City's vision and goals.</p>	City	Low	Low	High	Low	Long
Energy Infrastructure	<p>Use of the Irvine Master Plan to guide development and land use decisions. The Master Plan provides a framework for development and land use decisions that are consistent with the City's vision and goals. The Master Plan also provides a framework for development and land use decisions that are consistent with the City's vision and goals.</p> <p>Use of the Irvine Master Plan to guide development and land use decisions. The Master Plan provides a framework for development and land use decisions that are consistent with the City's vision and goals. The Master Plan also provides a framework for development and land use decisions that are consistent with the City's vision and goals.</p>	City	Low	Low	High	Low	Long
Transportation and Open Space	<p>Use of the Irvine Master Plan to guide development and land use decisions. The Master Plan provides a framework for development and land use decisions that are consistent with the City's vision and goals. The Master Plan also provides a framework for development and land use decisions that are consistent with the City's vision and goals.</p> <p>Use of the Irvine Master Plan to guide development and land use decisions. The Master Plan provides a framework for development and land use decisions that are consistent with the City's vision and goals. The Master Plan also provides a framework for development and land use decisions that are consistent with the City's vision and goals.</p>	City	Low	Low	High	Low	Long

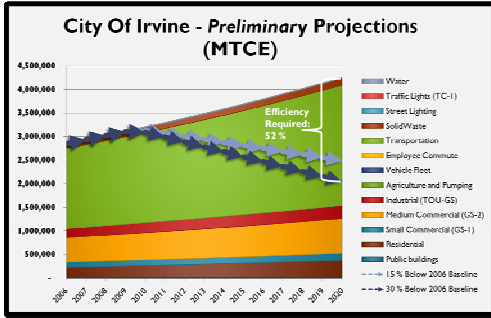
Four Types of Reduction Strategies

Reductions include:

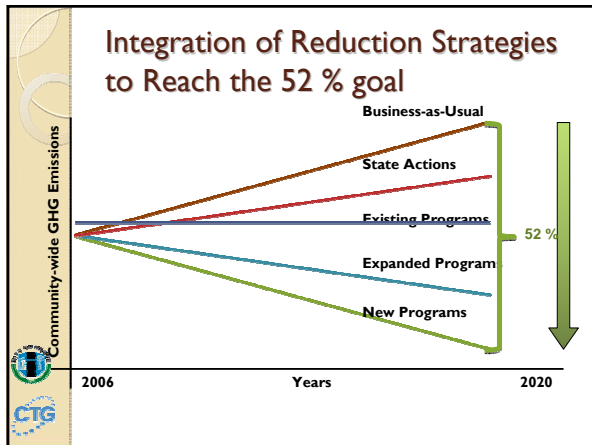
- State actions
 - e.g., Renewable Portfolio Standard
- Existing city programs
 - e.g., Irvine Green Building Program
- Proposed (unrealized) city programs
 - e.g., municipal building retrofit program
- New actions
 - e.g., community-wide building retrofit program



For 30 % Below 2006 – 52 % of Carbon Intensity needs to be reduced



Integration of Reduction Strategies to Reach the 52 % goal





Irvine Cap Six Step Process



Step 3: Analyze Potential of Reduction Strategies



- High Level Measures:
 - Energy Modeling
 - Transportation Analysis
 - Water Analysis
- Examples:
 - Reduction Potential of Increasing Mixed-Use
 - Reduction Potential of Using Weather-Based Controllers
 - Reduction Potential of Retrofitting Lights

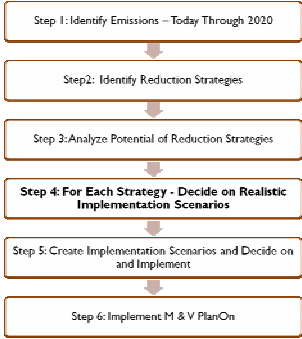

Characteristics of Strategies

Each strategy is described with respect to:

- Sector reduced (e.g., commercial)
- Percentage of sector influenced today
- Percentage of sector influenced at full implementation
- Percentage reduction in fraction of sector influenced
- **Bottom line: Each strategy is described with respect to the amount of reduction in each sector from 2006 baseline by 2020**

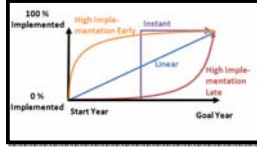



Irvine Cap Six Step Process

Step 4: For Each Strategy - Decide on Realistic Implementation Scenarios

- Instant Implementation
 - Green Power, Recycled Water, Etc.
- Linear Implementation
 - Exchanging Vehicle Fleet, Code cycles, Etc.
- High Implementation Late
 - Increasing Mixed-Use (Due to time demands in planning processes)



Example Strategy: Building Energy

- Reduce Building Energy Use Intensities
 - Irvine Building Policy Example:
 - Reduce EUI of 100 % of buildings by 35 % by 2014
 - Reduce EUI of 80 % of buildings by 50 % by 2016
 - Reduce EUI of 60 % of buildings to Net Energy Zero Energy by 2020



Example Strategy: Building Energy

- Implementation Strategy:
 - “High Implementation Late”
 - This is due to the nature of how building projects typically occur.

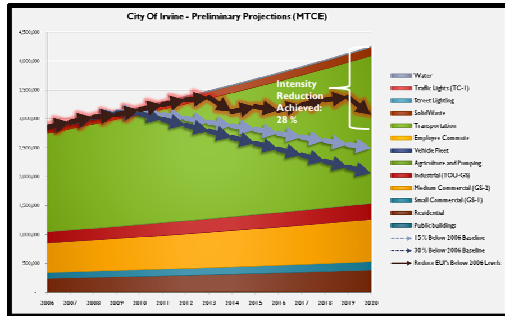
Reduction Strategy	Implementation Strategy	Goal (% of Sector)	Implemented By	Start Year	Fully Phased In Year	Maintain Taxes Active? (Y/N)	Incremental Reduction (%)	Reduction From 2008-2009	2009
Reduce Building Energy Use to 35% by 2014	High Implementation Late	100%	2014	2014	2014	Yes	35%	35%	35%
Reduce Building Energy Use to 50% by 2016	High Implementation Late	80%	2016	2016	2016	Yes	50%	50%	50%
Reduce Building Energy Use to Net Zero	High Implementation Late	60%	2020	2020	2020	Yes	60%	60%	60%



Irvine Cap Six Step Process



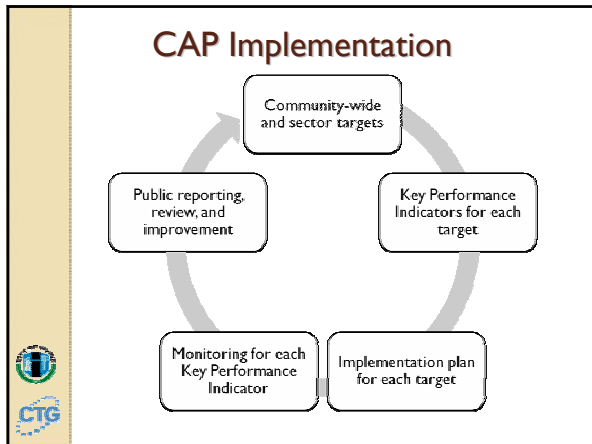
Irvine Results – Three Stage Building Policy Implemented

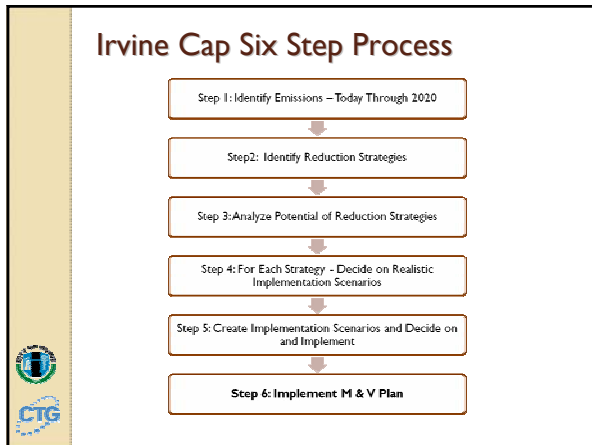


Step 5: Create Implementation Scenarios and Decide on One

- Activate and Deactivate Multiple Strategies until 2020 Target is Reached
- Based on
 - Cost
 - Ease of Implementation
- Account for Uncertainties (Sensitivity analysis of inventory data)
 - This Clarifies What the Top Priorities for Measurement & Verification Will Be
- Note: The City is using a tool provided by CTG Energetics which contains the inventory, growth projections as well as all the reduction strategies.







Step 6: Implement M & V Plan

- Identify Key Performance Indicators to Measure (Based on Sensitivity Analysis)
- Update Inventory and Actual Performance on an Ongoing Basis (at least annual)
 - This will calibrate inventory as well as creating a feedback loop on progress.



Funding

Energy Master Plan = Approx. \$100K

GHG Protocol Development =
Approx. \$100K

Climate Action Plan Development =
Approx \$135K

Web-based Monitoring and
Verification = Approx. \$200K



Contact Information

Chandra K. Krout, AICP, LEED AP, GPR
Environmental Programs Administrator
Community Development Department
ckrout@ci.irvine.ca.us