



Supporting California local governments

ClearPath Framework for CAP Development

June 15, 2017

Mike Steinhoff – ICLEI-USA

About SEEC

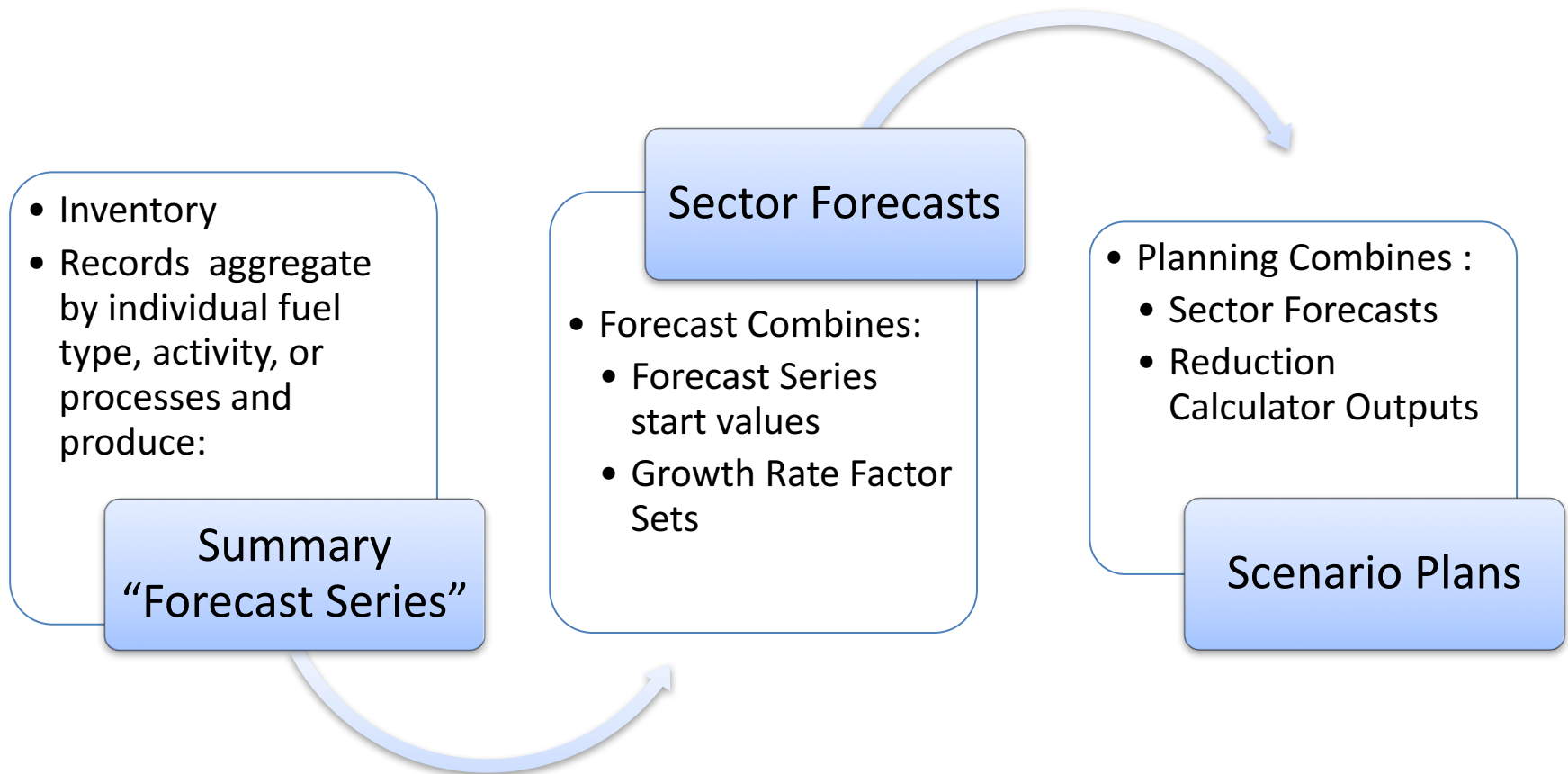
The Statewide Energy Efficiency Collaborative (SEEC) is an alliance between the Local Government Commission, ICLEI Local Governments for Sustainability, the Institute for Local Government and California's four investor-owned utilities.

This program is funded by California utility customers and administered by Pacific Gas and Electric Company®, San Diego Gas & Electric Company®, Southern California Edison® and Southern California Gas Company under the auspices of the California Public Utilities Commission.

Agenda

- Features for Inventory Management Over Time
- ClearPath Forecasting Framework
- ClearPath Planning Framework
- Alternate Approaches to Forecasting and Plan Development
- Q&A

ClearPath Workflow



Inventory Management Tool – Dealing with Change

- ClearPath – Your data is safe and sound on the cloud!
 - Ability to revisit, review, and revise at any time
- Hopefully you'll be doing many inventories between periodic plans and we'll want to keep those up to date.

Inventory Management Tool – Features for Managing Change

- What to do when data changes
- One record impacted or many?

Edit Inventory

* Name

SEEC Demo 2013 Community Inventory

* Year

2013

Status

Complete

☒ Official Inventory for Selected Year

Note: selecting this as the official inventory will affect multi-year inventory reports.

* Global Warming Potential

IPCC 4th Assessment

carbonn Climate Registry (cCR) Account Token

fe_users270

A cCR token is required to send your inventory data to the registry. [Login](#) to your cCR account to obtain your token. If you have not established a cCR account, please register here.

Save

Recalculate Outputs

Clone

Publish data to carbonn

Inventory Management Tool – Data Management

- Use Case: Our Activity Data Provider has developed a new method that is different from what was used in past inventories.
- We'd like to maintain a record of the original calculations that match published reports for reference.
- Clone an Inventory and Update Records

Inventory Management Tool – Data Management

- Emissions Factors that change year-to-year, always a few years behind, sometimes 5 years behind.
- Best practice is to make use of the most recently available.
- What to do when new info becomes available?
 - A: Clone & Update Records

Inventory Management Tool – Data Management

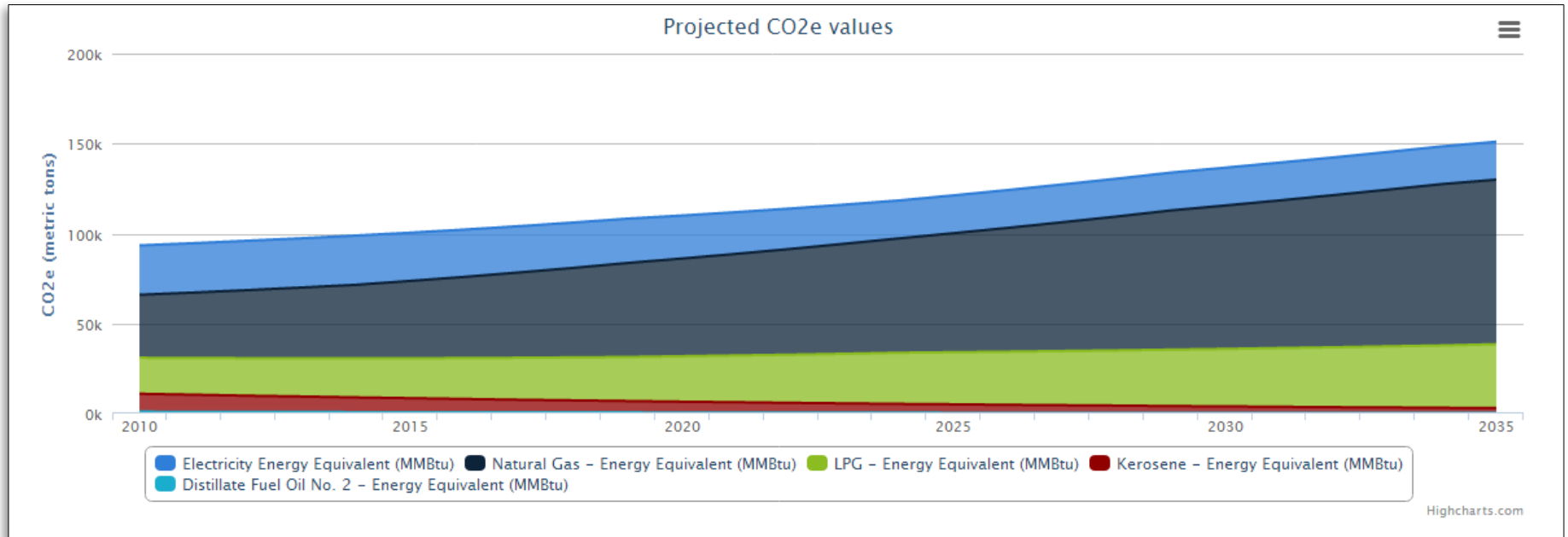
Global warming potential (GWP) values relative to CO₂

Industrial designation or common name	Chemical formula	GWP values for 100-year time horizon		
		Second Assessment Report (SAR)	Fourth Assessment Report (AR4)	Fifth Assessment Report (AR5)
Carbon dioxide	CO ₂	1	1	1
Methane	CH ₄	21	25	28
Nitrous oxide	N ₂ O	310	298	265
Substances controlled by the Montreal Protocol				
CFC-11	CCl ₃ F	3,800	4,750	4,660
CFC-12	CCl ₂ F ₂	8,100	10,900	10,200
CFC-113	CCl ₃ CF ₃	10,900	11,700	11,600

... More in the future

- Explore the impact of shifting GWP sets with the “Recalculate Outputs” button
- As these numbers continue to evolve, you will be able to keep pace with the science

Forecasting



AKA: Business as Usual

AKA: Baseline Scenario

In the recent past...

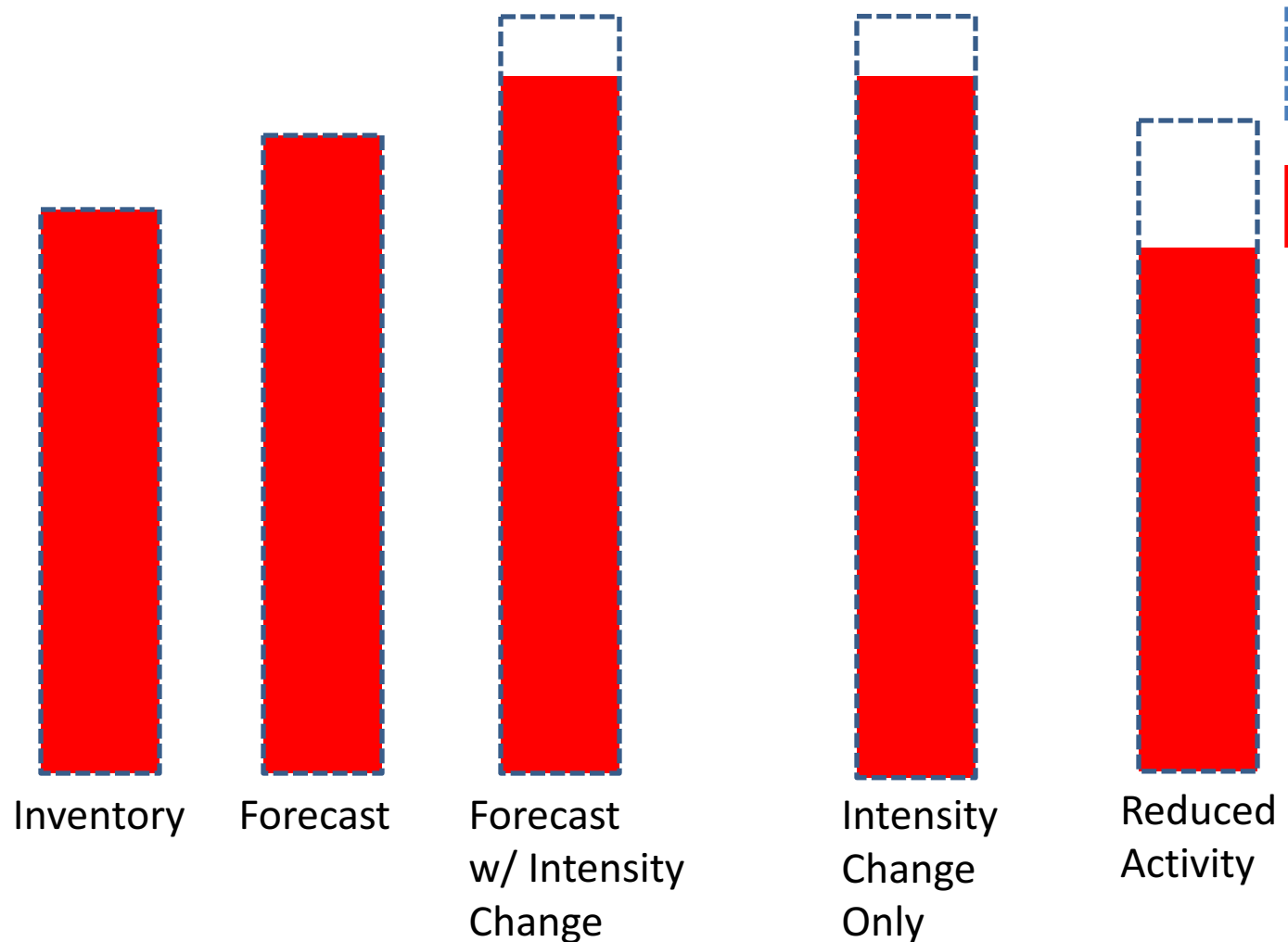
- Forecasts: Everything Scales with Population Growth
 - Best available data, but we can do better
- Reductions from Actions Calculated in Isolation
 - Calculations evolved out of single retrofit approaches, not from a systems view of the community

Forecasting – Anticipating Change

- Review:
 - Inventory data defines “Forecast Series”
 - Forecast Series is combination Activity & Fuel Type
 - Eg. Gasoline VMT, Wood Stationary Combustion
 - Emissions Growth can be 1 factor (activity only) or 2 factor (activity and carbon intensity)

Inventory Output	Starting Value		Coefficients	Growth Rates
Electricity Energy Equivalent (MMBtu)	Quantity	507421	Growth Rate	High Growth Scenario ▼
	CO2e	16146	Carbon Intensity Factor	RPS Scenario 1 ▼
Natural Gas - Energy Equivalent (MMBtu)	Quantity	1252050	Growth Rate	Slow N Steady ▼
	CO2e	66554		

Forecasting w/ Two Modes of Action



Forecast Activity Units

- Energy in MMBtu
- Transportation in VMT
- Common “currency” allows for easy:
 - Calculations that affect multiple fuels
 - Fuel switching

Inventory Output	Starting Value		Coefficients	Growth Rates
Electricity Energy Equivalent (MMBtu)	Quantity	<input type="text" value="507421"/>	Growth Rate	<input type="text" value="High Growth Scenario"/>
	CO2e	<input type="text" value="16146"/>	Carbon Intensity Factor	<input type="text" value="RPS Scenario 1"/>
Natural Gas - Energy Equivalent (MMBtu)	Quantity	<input type="text" value="1252050"/>	Growth Rate	<input type="text" value="Slow N Steady"/>
	CO2e	<input type="text" value="66554"/>		

Forecasting – Anticipating Change

- Growth rates are flexible and can represent many different drivers as long as presented in compound annual growth terms
- Forecast Helper calculator can create growth rates from raw numbers

Name	
Slow and Steady	
1990-1994	<input type="text"/>
1995-1999	<input type="text"/>
2000-2004	<input type="text" value="0"/>
2005-2009	<input type="text" value=".01"/>
2010-2014	<input type="text" value=".01"/>
2015-2019	<input type="text" value=".01"/>
2020-2024	<input type="text" value=".01"/>
2025-2029	<input type="text" value=".01"/>
2030-2034	<input type="text" value=".01"/>

Drivers of Change in Activity Data

- Building Energy:

$$\text{Usage} = f(\text{Building Area} \times \text{Energy Intensity})$$

- How are these two things likely to change together over time?
 - Growth Rate Approaching Zero!

Forecasting – Good Practice







- Testing multiple scenarios
 - Investigate many futures (+ or – 5%, 10%)
 - Once growth rates set up, run scenarios, export results and compare in Excel
 - Use Case: What's the impact of the RPS for my community?

Planning - Driving Change

- Review Cumulative and Effective Useful Life (EUL) dynamics
- Example Action reduces 5 MT/Yr, lasts 5 Years
 - (Most EUL ~15-20 years)

	Implementation Activity Reductions	Activity Returned Post - Effective Useful Life	Net Change From BAU
2015	-5		-5
2016	-5		-10
2017	-5		-15
2018	-5		-20
2019	-5		-25
2020	-5	5	-25
2021	-5	5	-25
2022	-5	5	-25
2023	-5	5	-25
2024	-5	5	-25
2025		5	-20
2026		5	-15
2027		5	-10
2028		5	-5
2029		5	0

Actions & Time-Based Behavior

Action Type	EUL	Cumulative	Notes
Government Retrofits			One time fix, needs replacement later
Community Energy Efficiency			Impact Grows while program exists, but will plateau at EUL
Transit Service	0		Implement for long time periods
Transportation – Structural Change	∞		Cumulative behavior for ramp-in. Must match Implementation Timeframe

Fuel Switching

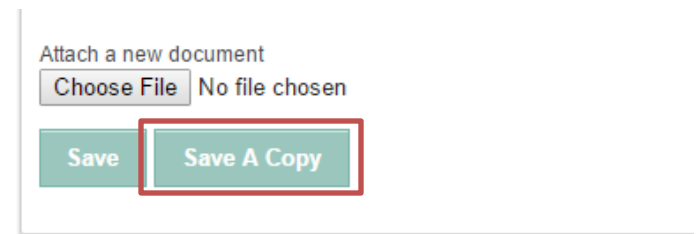
- Take action from one relatively high emissions intensity type and replace equivalent amount in a lower intensity
- Two examples: District Energy and EVs
- For ClearPath and new sources – Need a line item in the BAU!

Pulling It Together - Interactions

- ClearPath handles the biggest interaction between carbon intensity and activity
- Some onus on users to identify where two or more measures are impacting the same **specific** activity and customize inputs accordingly
 - ie – the exact same household, not necessarily households generally
 - Correcting for interactions depends on the calculation approach (percent reduction vs absolute)

Planning – Driving Further Reductions

- Challenging to acknowledge the short life of many actions
- Prompt to design plans around the next, better version of the action.
- Use the “Save a Copy” button for the future version of the action
- Only update the parts that need to change
 - % savings,
 - square feet affected,



Other Approaches to Forecasts & Planning in ClearPath

- Compound Annual Growth Rate is Confusing!
- Changing the base for each period changes the increment – Reductions actions may not be impacting the part of activity that is growing.
- User Defined Calculators could be used to “grow” activity w/ negative reductions in solid increments

ClearPath for Managing Carbon Budgets

- Many reduction targets and CAPs are defined in terms of a desired emissions rate for some future date.
- “Science Based Targets” recognize the problem is one of GHG concentration that leads to climate outcomes
 - Spending down our under 2° budget in ~20 years at current rates*

*http://sciencebasedtargets.org/wp-content/uploads/2015/09/SBTManual_PubComDraft_22Sep15.pdf

ClearPath Outputs Support a Carbon Budget View

- Plan “Scenario Basics” Report contains a year over year emissions from each sector
 - Easy Sum (in excel) gives the budget spent over the period
- Plan “Scenario Details” Report shows increment of reductions from each measure by year
 - Emphasis on the importance of **early action**

In the near future...

- Greater Emphasis on Carbon Budgets
- Pre-defined calculators for incremental growth
- New approaches to dealing with interactions
- And More!

Q&A

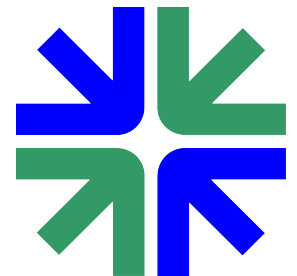


City of Emeryville Climate Action Plan 2.0

MATT ANDERSON

ENVIRONMENTAL PROGRAMS

JUNE 15, 2017



Why Did We Update the Climate Action Plan?

It's Required:

- State legislation/targets
- National and international agreements
- Local direction: City Council & community

Our Vulnerability:

- Sea level rise & extreme weather events
- Emergency planning, police & fire services
- Impacts: public health, transportation, infrastructure, pollution levels, power, security, costs, jobs

Leadership:

- For our community and other jurisdictions
- New technology & methods to consider

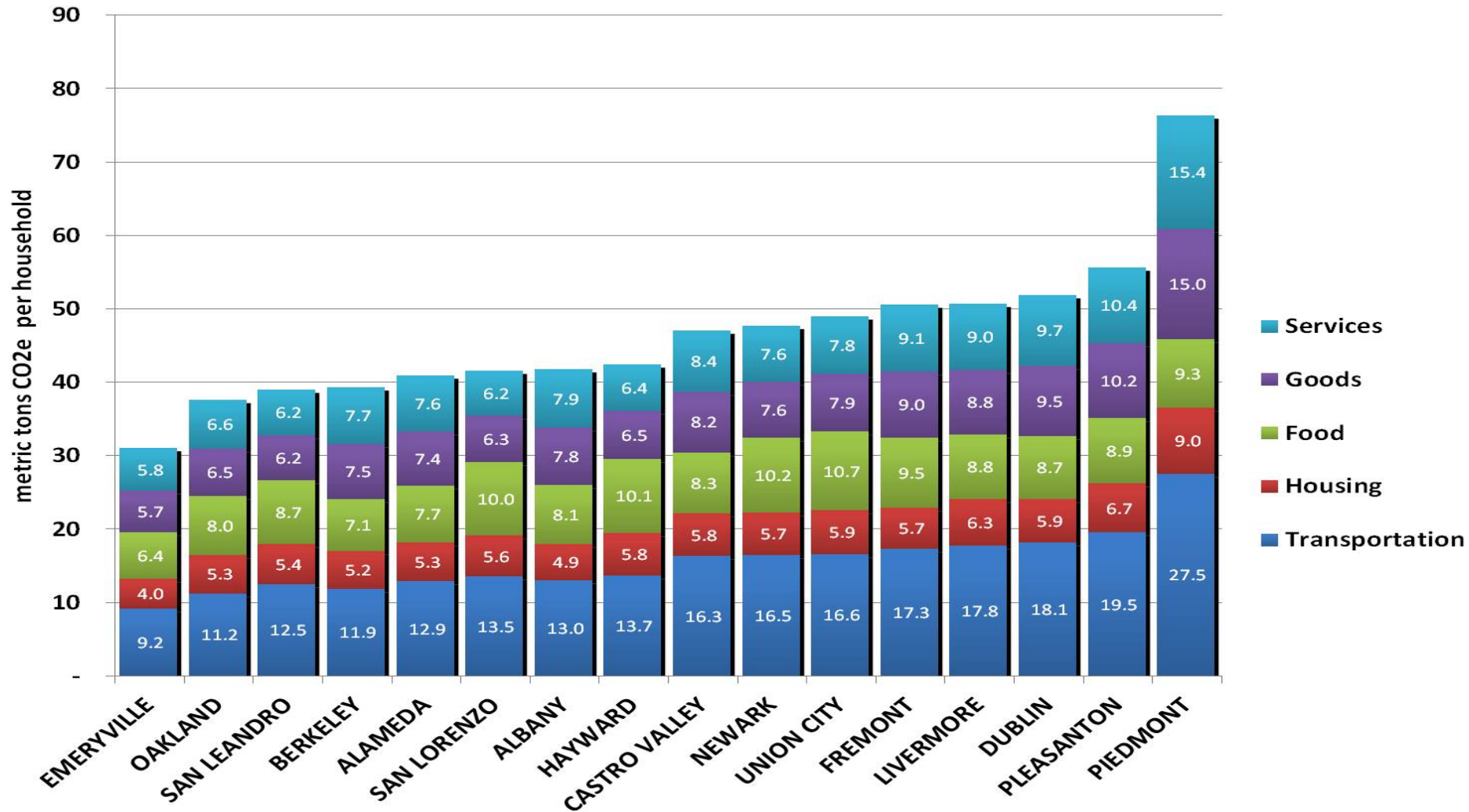


CAP 2.0 Outline

- Greenhouse gas (GHG) reduction targets for 2030 and 2050
 - 40% reduction of GHG emissions over baseline levels by 2030
 - 80% reduction of GHG emissions over baseline levels by 2050
- Backed by Executive Order B-30-15, SB 32, and SB 379
- Hazard vulnerability assessment (427 Climate Solutions)
- Updated community and municipal GHG inventories
- Climate mitigation action plan for 2030
- Climate adaptation action plan for 2030
- Vision for 2050
- Monitoring plan for checking in on initiatives progress

Bay Area Consumption-Based Inventory

Alameda County Cities GHG Footprint per Household



Creation Process

- Who is this for? How will it be used?
- Review of potential measures
 - National, state, regional, and local plans
 - REV Sustainability Circle → municipal component
 - Regional peer sharing via StopWaste, CivicSpark, and Energy Watch
- Inventory update and forecasting via ClearPath
- Public input
 - Online survey
 - Postcard mailers + public workshops
 - Residents' committee (first CAP)
- Ratification
 - Compact of Mayors
- Time requirements (1 yr+)
 - Find an intern or CivicSpark Fellow!

Monitoring Plan Timeline

- (Req) Covenant of Mayors every 2 years
- (Req) Full reports every 4 years
- (Opt) Awards & recognition incentivize yearly reporting (Beacon Awards)

Monitoring Report Component	2018 Reporting	2020 Reporting	2022 Reporting
Overall Strategy: Reporting any changes to initial strategy as well as updated information on human and financial resources	Yes	Yes	Yes
GHG Emissions Inventories: Provide updated energy consumption and GHG emissions data for the reporting year	No	Yes	No
Mitigation and Adaptation Action Plans: Report the implementation status (completed, in progress, on hold) of key actions and update their impacts	Yes	Yes	Yes

Climate/Sustainability Programs

Underway

- Climate adaptation in Local Hazard Mitigation Plan (LHMP)
- Property Assessed Clean Energy (PACE) Financing
- Bike Share program
- Outreach on energy opportunities and waste management
- Voluntary Commercial Building Audit Program with ABM
- Bay Area SunShares Program
- Compact of Mayors reporting
- Food procurement policy at Emeryville Center of Community Life

Continuing or Planned

- Alameda County Community Choice Energy (CCE)
- Sustainable consumption outreach campaign
- City facilities waste audit
- Building Energy Savings Ordinance (BESO)
- Electric vehicle (EV) charging stations at City Hall
- Green Infrastructure Plan
- Solar carport at City Hall
- Environmentally Preferable Purchasing
- Best value bidding, including environmental impact
- Commute Benefits for Employees
- Regional sea level rise study and action
- Community engagement training

Lessons

- Adaptation and mitigation both necessary
 - LHMP Adoption
 - Potential lead agencies important
 - Coordination with other city plans
- Accountability via committee
 - REV Sustainability Circle vs. City Sustainability Committee
- Implementation plan updates irregular
 - Time constraints
 - Length of document
 - Split CAP goals and implementation plans into different policy documents → living documents
- OPR Best Practices Pilot Program

Challenges

- Funding
 - Development/Impact fees (parking fees, planning permit surcharge, etc.)
 - Waste collection fee, UUTs
 - Capital Improvement Plan allocations
 - Grants (EECBG, EPA, Air Districts, DOE)
- Managerial support
 - Multiple levels, recognition rather than requirement
- Staff time
 - Prioritizing by impact and economic viability
- CAP publicity and usage
 - Staff trainings, community groups, codified targets/actions

Questions?

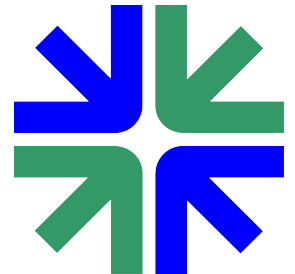


City of Emeryville Climate Action Plan 2.0

MATT ANDERSON

ENVIRONMENTAL PROGRAMS

JUNE 15, 2017



Energy and Climate Action Planning with the Gateway Cities

Noe Martinez Diaz

CivicSpark Fellow

Gateway Cities, Southern California

Gateway Cities Voluntary Participation in Climate and Energy Programs, Plans, and Policies

	Artesia	Avalon	Bell	Bellflower	Bell Gardens	Cerritos	Commerce	Compton	Cudahy	Downey	Hawaiian Gardens	Huntington Park	Industry	La Mirada	Lakewood	Long Beach	Lynwood	Maywood	Montebello	Norwalk	Paramount	Pico Rivera	Santa Fe Springs	Signal Hill	South Gate	Vernon	Whittier	Total Count
Descriptions of each are provided in the table below																												
Gateway Cities Energy Leader Partnership																												5
Energy Action Plan																												6
Beacon Program																												5
The Energy Network																												5
Los Angeles Regional Agency																												3
Tree City USA																												6

Legend 1

	In Progress
	Participant/ Completed

	Artesia	Avalon	Bell	Bellflower	Bell Gardens	Cerritos	Commerce	Compton	Cudahy	Downey	Hawaiian Gardens	Huntington Park	Industry	La Mirada	Lakewood	Long Beach	Lynwood	Maywood	Montebello	Norwalk	Paramount	Pico Rivera	Santa Fe Springs	Signal Hill	South Gate	Vernon	Whittier
Climate Actions Items																											
The following was obtained from the 2016 California Jurisdictions Addressing Climate Change Summary (Office of Planning and Research)																											
https://www.opr.ca.gov/docs/2016_California_Jurisdictions_Addressing_Climate_Change_Summary.pdf																											
General Plan Policy	A	IP																									
GHG Emissions Inventory				C												C										C	
GHG Reduction Plan				P																							
Climate Action Plan				P												IP											
Sustainability Plan																A								A		C	
Last Updated	6/9/2017																										

Legend 2

A	Adopted
C	Completed
IP	In Progress
P	Planned

Contacts for Beacon Program

Name	Title	Category	Email	Phone	Status
	Public Services Manager	Energy Efficiency, Promoting Community and Individual Action Activity, Green Building, Energy and offsetting Carbon Emission, Open Space			A
	Utilities and Project Manager	Water & Wastewater			A
	Special Projects Coordinator	Energy Efficiency, Open Space			A
	Maintenance Supervisor	Open Space, Offsetting Carbon Emissions			A
	Maintenance Supervisor	Open Space, Offsetting Carbon Emissions			A
	Administration	Waste Reduction and Recycling			A
	Planning Manager	Promoting Community and Individual Action Activity, Green Building			A
	Manager of Strategic Planning & Administrative Services	Efficient Transportation			C
	Buyer	Efficient Transportation			A
	Assistant Planner	Land Use and Community Design			N
	Administrative Services Manager	Water & Wastewater, Water Reduction and Recycling, Renewable Energy and Low Carbon Fuels			A
	Fleet Maintenance Manager	Renewable Energy and Low Carbon Fuels			A
	Management Analyst I	Promoting Community and Individual Action Activity			A
	Building & Safety Manager	Green Building			A
	Management Analyst	Green Building			A
	Interim City Engineer	Green Building			C
	Management Analyst	Energy Efficiency			A
	Senior Planner	Green Building, Community & Individual Action			A

CES 3.0 Disadvantaged Communities in the Gateway Cities

