

# Climate –Energy City Council Study Session

Nov. 12, 2014

# Introduction of Staff Presentations

Part I:

Energy as Driver of Climate Commitment - Brett KenCairn

Part II:

Updates on DSM Programs/TMP contributions - Kendra  
Tupper and Chris Hagelin



# BOULDER'S CLIMATE ACTION COMMITMENT

The City of Boulder, its residents, and local businesses will act to achieve carbon neutrality as quickly as possible

## CARBON NEUTRALITY

FOCUS AREA



RAMP UP RENEWABLES



BETTER BUILDINGS



TRAVEL WISE



WASTE NOT



GROW GREEN



EVERY DROP

PLAN

LOCAL ENERGY ACTION PLAN

TRANSPORTATION MASTER PLAN

ZERO WASTE MASTER PLAN

URBAN FORESTRY PLAN, VISITOR MASTER PLAN, PARKS AND RECREATION MASTER PLAN

WATER UTILITY MASTER PLAN AND WASTEWATER UTILITY MASTER PLAN

5-YEAR GOALS

X% CO<sub>2</sub> Reduction  
X% Renewables

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X% CO<sub>2</sub> Reduction  
Vehicle Miles Traveled Per Person

X% CO<sub>2</sub> Reduction  
X% of Waste Diverted

X% CO<sub>2</sub> Reduction  
Biosequestration

X% CO<sub>2</sub> Reduction  
Gallons of Water Conserved

ANNUAL TARGETS

kW of solar panels installed  
kWh of hydro-electricity generated

Number of SmartRegs compliant properties  
Number of properties using EnergySmart City Buildings

Vehicle Miles Traveled  
Biodiesel Commuters  
Bike Trails  
City Fleets

Waste Diverted  
Tons Composted

Trees Planted  
Land Conservation  
Local Agriculture

Gallons Conserved  
Wastewater Treated

▶ THIS WILL TAKE THE ENTIRE COMMUNITY.

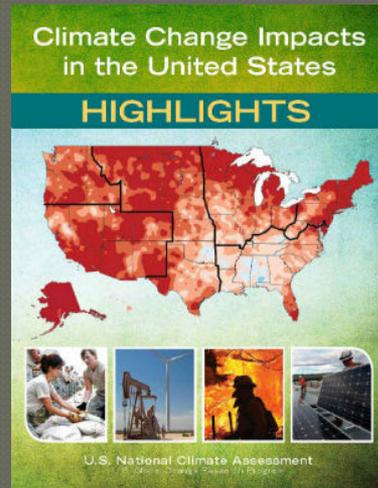
# 2014 Accomplishments

- Continued collaboration and delivery of EnergySmart
- Launched stakeholder engagement for development of options for a Commercial and Industrial (C&I) Energy Ordinance
- SmartRegs: Implementation strategy for the next four years by integrating into Rental Housing Licensing program

# More 2014 Accomplishments

- Conducted municipal and community GHG accounting using newly developed in-house tool
- Developed Community Power Partnership (CPP) Pilot w/ Pecan St. Institute
- Launched legal action related to municipalization
- Created Transition Plan to ensure smooth switchover

# Climate Change: What We Know



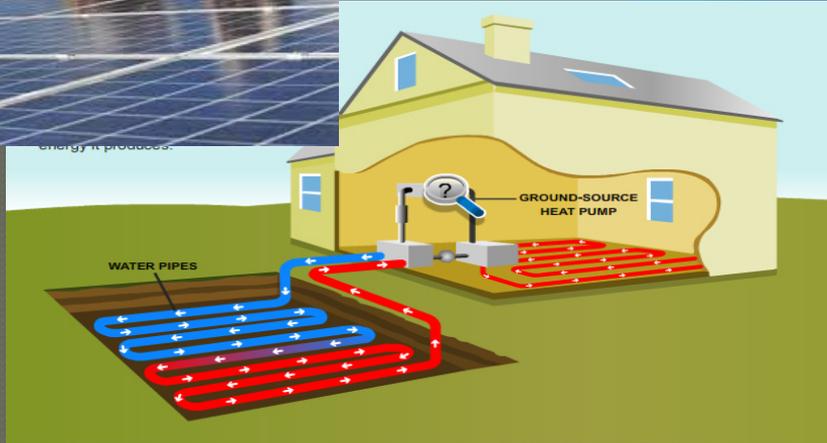
# The Climate Problem is an Energy Problem



# The Climate Solution: Energy System Transition to 80-90%+ Clean Energy in 25-30 Years



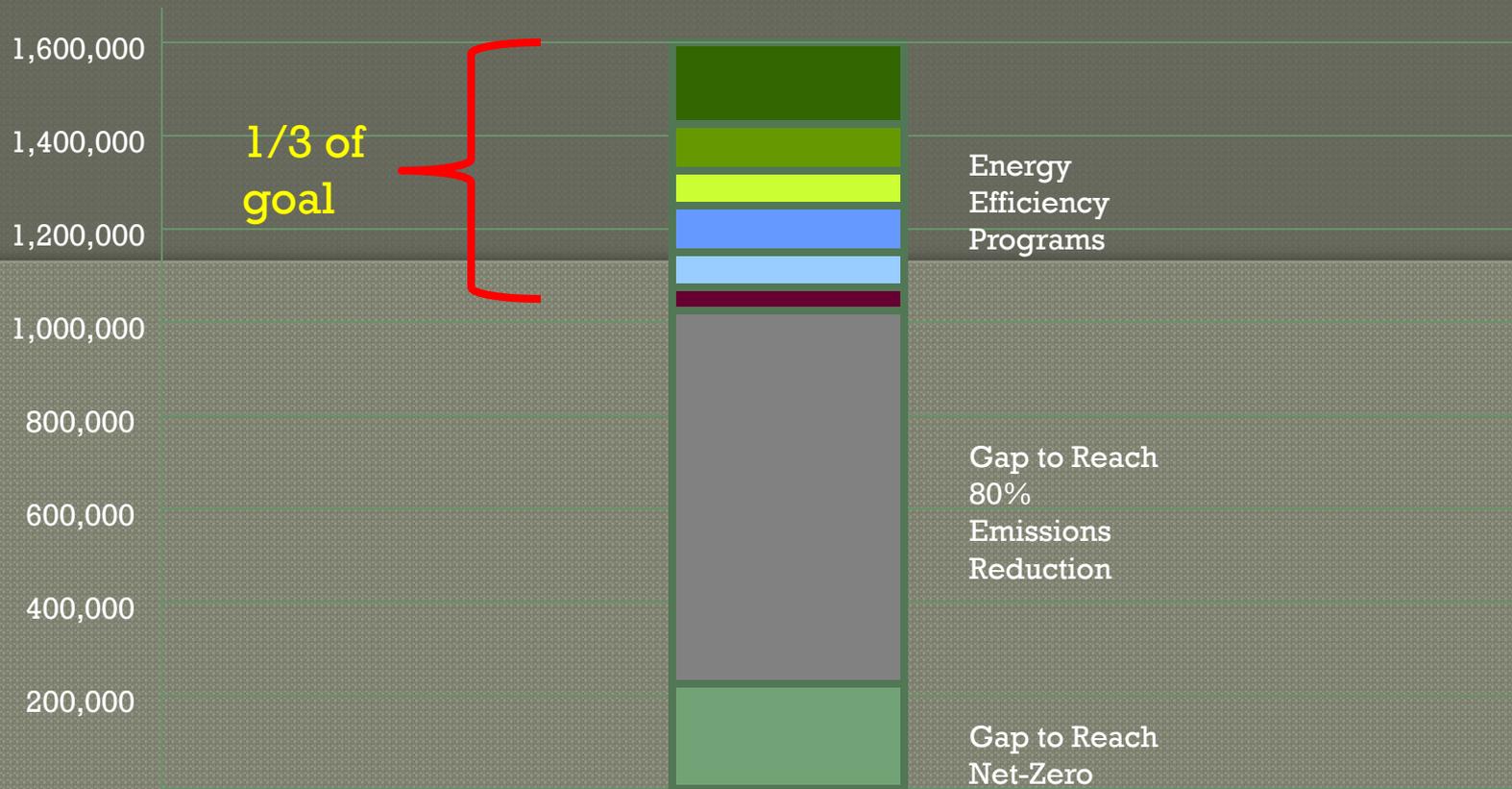
energy it produces.



## Two Questions in 2014:

1. How far can our current and planned programs take us towards an 80% reduction objective?
2. What additional actions would be necessary to achieve the remaining gap?

# REDUCTION: Energy Efficiency Reductions at 2050



## Four Important Qualifications:

1. The numbers are relative, not absolute
2. The size of program contributions does not include past contributions
3. Program impacts are both direct and indirect—they can't be measured fully in isolation.
4. The value of programs is greater than emissions reduction contributions

# The Four "R's" of Climate Action:

Reduction (efficiency & conservation)

Replacement (fossil fuels to clean energy)

### Existing Utility Baseline with Efficiency

### 50% Clean Electricity

### 100% Clean Electricity Utility

1,600,000  
1,400,000  
1,200,000  
1,000,000  
800,000  
600,000  
400,000  
200,000



3/4 of  
goal

Gap to Reach  
80%  
Emissions  
Reduction



50% Clean  
Electricity  
Sources

Gap to Reach  
80%  
Emissions  
Reduction



Energy  
Efficiency  
Programs

100% Clean  
Electricity  
Sources

Gap to Reach  
Net-Zero

110% of  
goal

## Three Questions in 2015 :

1. What does the energy system look like that can get us to an 80% reduction objective?
2. What motivates a community-wide movement to support and co-develop such a system?
3. What are the options if we don't have the authority to redesign the system/form a local electric utility?

# The Four "R's" of Climate Action:

Reduction (efficiency & conservation)

Replacement (fossil fuels to clean energy)

**Redesign (all energy system transformation)**

# A Whole Energy System Transition Requires:

**Focus on Local Generation**



**Support of Local Energy Marketplace**



**Transition All Sources of Energy**



**Focus on Energy Resilience**



**USDN**

urban sustainability  
directors network

Boston

Vancouver

San Francisco

Minneapolis

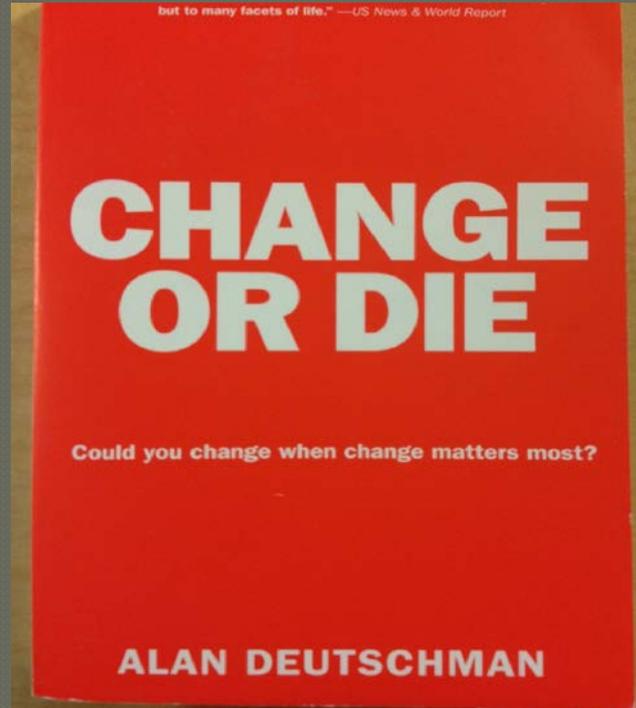
Portland

Boulder



# Lessons Learned from 10+ Years of Climate Action

**Peril is a bad  
motivator**



# The Four "R's" of Climate Action:

Reduction (efficiency & conservation)

Replacement (fossil fuels to clean energy)

Redesign (all energy system transformation)

Reform (local, state, national energy policy)

# Next Steps

1. Finalize target setting in both efficiency and source replacement
2. Organize energy “blueprint” development with other leading cities
3. Initiate a community energy system engagement and dialogue process
4. Return to council in early 2<sup>nd</sup> Quarter 2015 with a proposed goal framing, targets and updates

# Council Questions for Part I

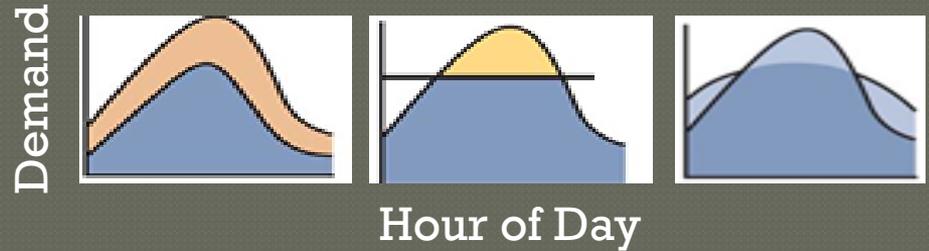
1. Feedback or questions on findings related to current and potential energy related initiatives and their contributions towards an 80% emissions reduction objective.
2. Feedback or questions about proposed next steps for Boulder's Climate Commitment.

# Integrated Energy Work Plan and Key Program Updates

- Summary of programs and recent successes
- Evolution of Demand Side Management (DSM) Strategy
- Commercial and Industrial (C&I) Energy Efficiency Ordinance

# Defining Key Terms

**Demand Side Management (DSM)** reduces or modifies the demand for energy



# Defining Key Terms

**Commercial and Industrial (or C&I)** includes all non-residential buildings

**Industrial** buildings: primary use is assemblage, processing, or manufacturing

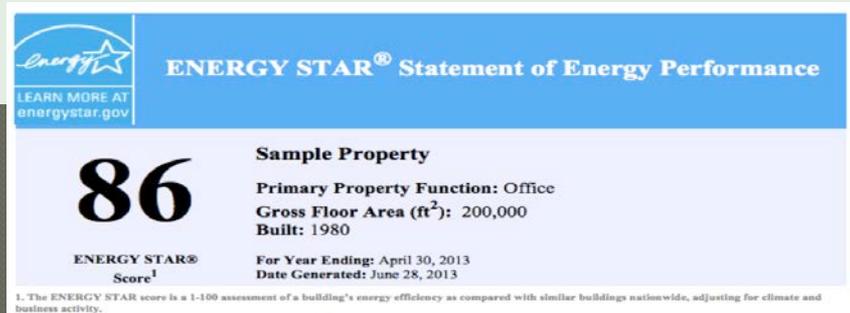


# Defining Key Terms

## Rating + Reporting:

- **“Rating”** refers to the process of measuring and comparing the normalized energy use of a building to other similar buildings.
- **“Reporting”** means disclosing the energy use and associated ratings.

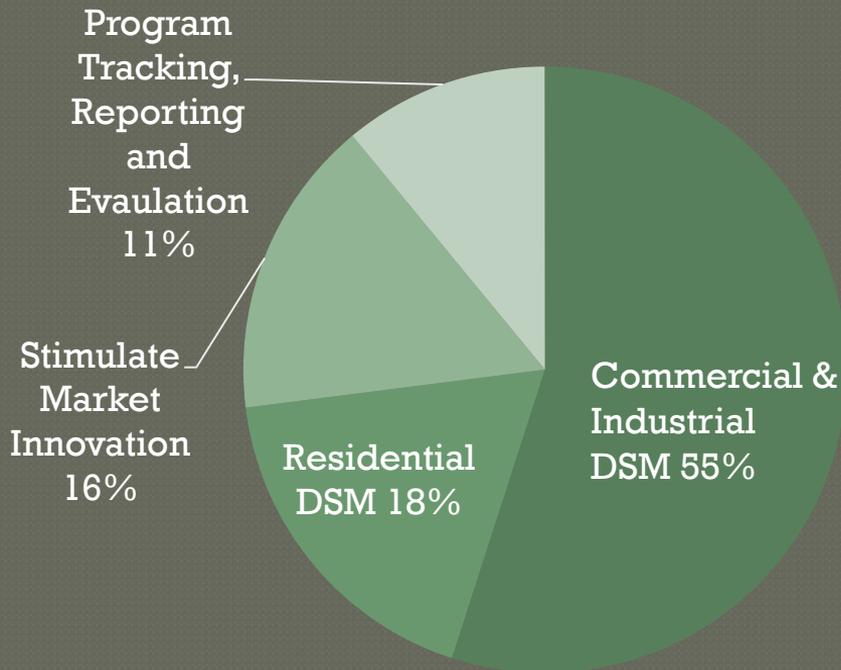
\* Source: Sample ENERGY STAR scorecard



# 2015 CAP Tax Allocation



Community Power Partnership



*Estimated Climate Action Plan (CAP) tax revenue for 2015 is \$1.8 million*

# 2015 Integrated Energy Work Plan



Demand Side  
Management  
Programs\*



Pilots and Cross-  
Cutting Efforts\*



Municipalization



Local Generation  
Analyses

\*Primarily funded by CAP Tax. Other efforts funded through Energy Future budget or other dedicated sources.

# Key Program Updates: SmartRegs



**Rental Housing  
License (RHL)  
Energy Efficiency  
Requirement**



- Halfway thru 8-year implementation plan with over 5,400 (~25%) rental units compliant
- 2015 focus: Fully integrate with city's RHL program

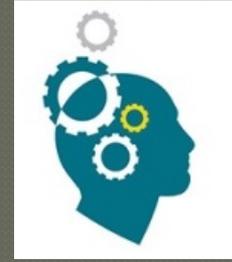
# Key Program Updates: EnergySmart



	Commercial	Residential
Units Upgraded	~ 700	~ 3,000
Rebates Awarded	> \$1.7 M	> \$1.4 M

# Key Program Updates

## Boulder Energy Challenge

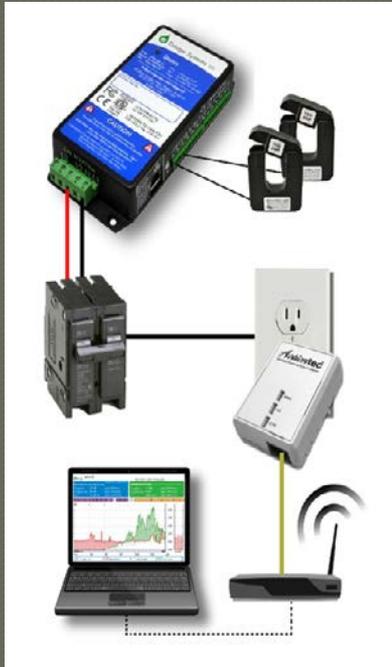


- Launched in June 2014
- Funding six projects, totaling \$337,500
- 2015: Project tracking and advising



# Key Program Updates

## Community Power Partnership (CPP)



- 14 business and 47 residential installs
- Collaboration with water utility

### Next Steps:

- Complete business installs
- Launch business engagements
- Analyze data

# Program Evolution: DSM Strategy

**GOAL:** To create DSM programs that accelerate the widespread reduction of GHG emissions, foster economic vitality, and can adapt to changes in community needs and external influences.

## Key 2015 Efforts

Develop **Commercial and Industrial Energy Ordinance**

Develop **Energy Services** for the City's Utility of the Future

Execute **SmartRegs** implementation strategy

Continue to implement, evaluate, and improve **EnergySmart**

## Target Milestone

Dec. 2015: Develop 3-year DSM Strategy

# Existing and New DSM Programs

## Voluntary City Programs

Residential and Commercial **Energy Smart**

DSM for **City-owned Facilities**

**Joint efforts/partnerships** with key entities (e.g. University of Colorado Boulder, Federal Labs, etc)

## Mandatory City Programs

New Construction **Energy Codes**

Rental Housing Energy Efficiency Requirement: **SmartRegs**

Future **C&I Energy Ordinance** (Rating + Reporting, Efficiency)

## Future Utility Energy Services

**Utility Energy Services** (efficiency, demand response, etc)

New programs shown in white

# New Program: C&I Energy Efficiency Ordinance

## Proposed Objectives

Improve quality  
of commercial  
building stock

Realize cost  
effective energy  
savings

Help owners  
understand and  
manage energy use

Gather benchmarking  
data to inform future  
programs and services

Increase awareness  
of efficiency  
opportunities

# New Program: C&I Energy Ordinance Milestones

## Target Milestones

- Complete stakeholder engagement: March 2015
- Develop options to present to council: June 2015
- Ordinance Adopted: Aug. 2015
- Earliest that compliance would begin: 2017



# Transportation-Related Emissions

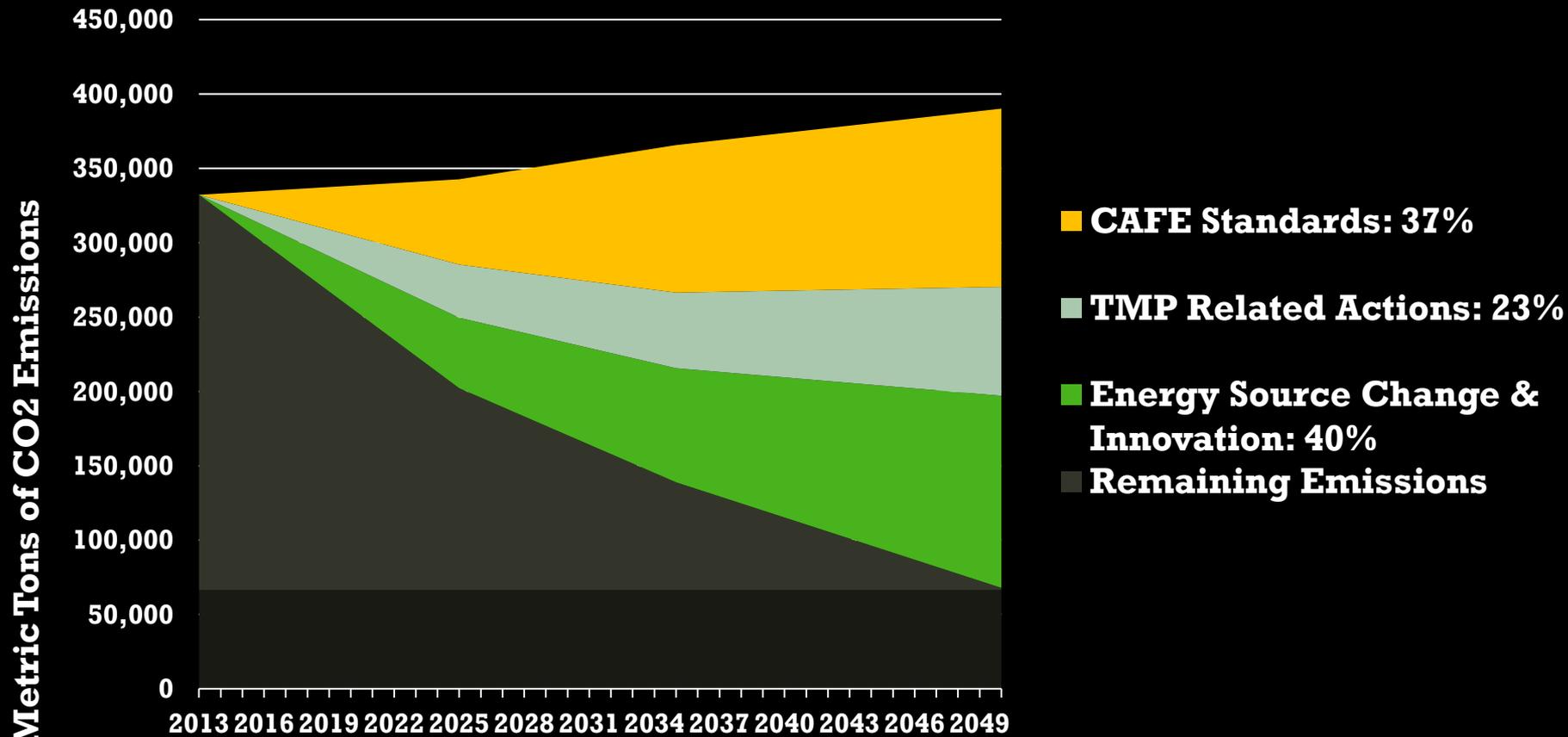
- Approximately 20 percent of GHG emissions
- Goal: Reduce by 80 percent by 2050
- Reduction Strategies
  1. Transportation Master Plan Implementation
  2. Fuel efficiency: Federal CAFE Standards
  3. Energy Source Change and Innovation

BREATHING REQUIRED

DRIVING OPTIONAL



# Transportation Emissions Reduction Analysis



# Next Steps for Transportation Assessment

## ● GHG Reduction Metrics

- Measuring carbon intensity of vehicle travel with miles per gallon equivalency (MPGe)
- Measuring carbon intensity of overall Person Miles of Travel (PMT)

## ● Implementation of TMP Action Plan

## ● SWEEP Analysis

- EV adoption rates
- EV infrastructure demand

## Council Questions for Part II

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- Does council have any comments or questions on the 2015 work plan, specifically the proposed process and timeline to develop a commercial energy efficiency ordinance?