

Greenprint Denver

Mayor John Hickenlooper's Sustainable Development Program



greenprint denver

Integrating Air Quality and Transportation (and Land Use) Planning

A Local Government Framework for Developing Strategic GHG Reduction Targets

Gregg W. Thomas

Denver Department of Environmental Health

NARC Annual Conference, Jun 1 2009





Overview

- For GHG, What is Our Starting Point?
 - Need a baseline from which to set goals
- How Do We Set (Realistic) Goals?
 - Are there federal, state, or local mandates?
- How Do We Develop and Implement GHG Reduction Strategies?
 - Can we leverage existing plans?
 - Can we wait for state/federal solutions?
- What's Missing?
- Summary



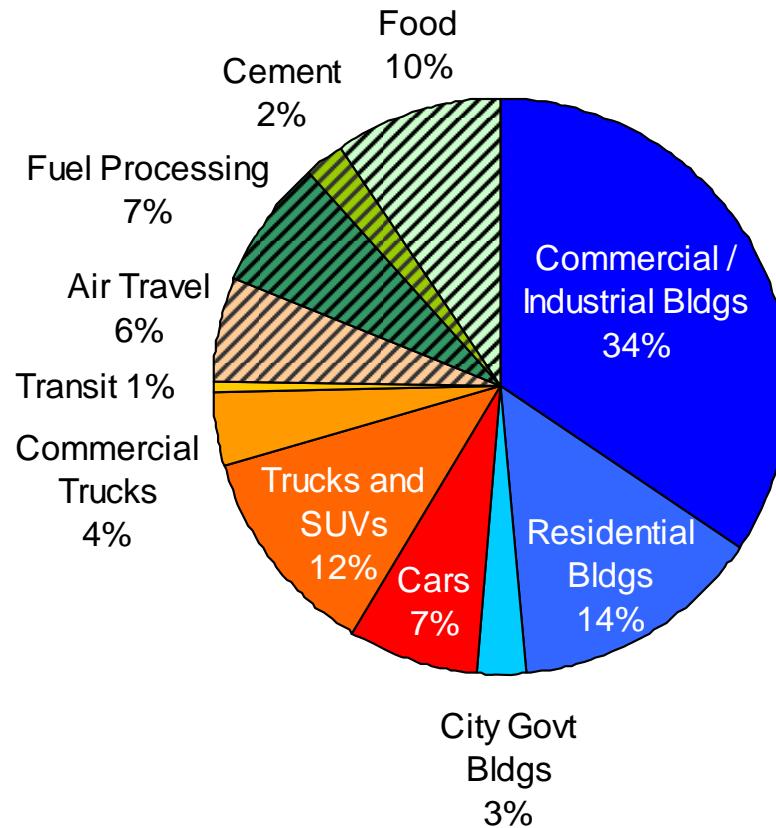
What's Our Starting Point?

- Denver did not have a community wide GHG inventory prior to 2005
- Partnered with University of Colorado @ Denver to develop a GHG inventory and carbon footprint
 - Sustainable (and affordable) partnership
- Evaluate 1990, 2000, and 2005
 - Is Kyoto Goal (US 7% reduction 1990-2012) reachable?
- City is viewed as a demand center for energy AND key urban materials



2005 Greenhouse Gas Emissions in Denver

Per Capita emissions = 25.2 mtCO₂e / person
Total Footprint = 14.6 million mtCO₂e



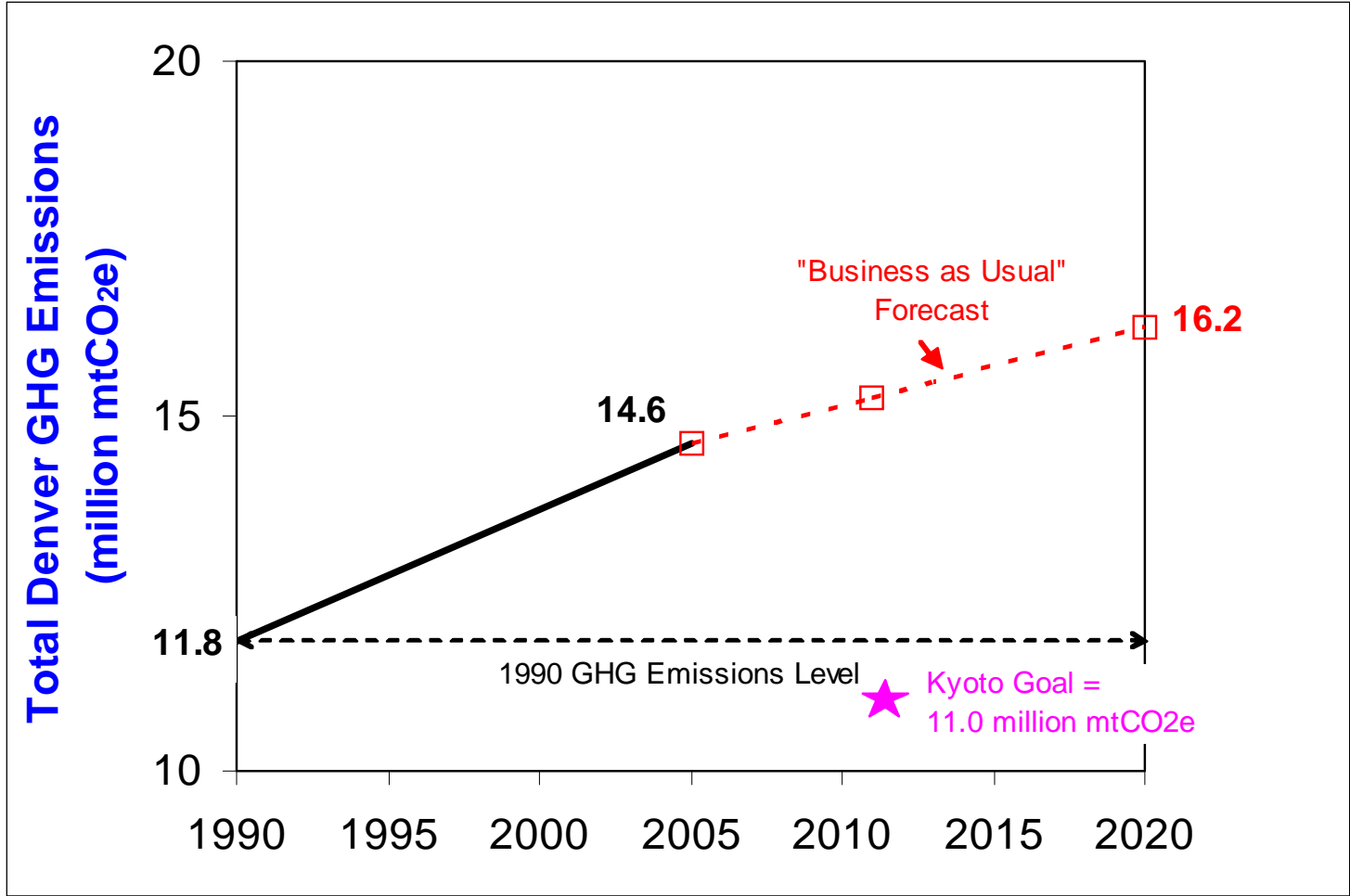
www.greenprintdenver.org

Source: http://www.greenprintdenver.org/docs/Denver_GHG_Inventory_Report.pdf





GHG Emissions Trends in Denver



www.greenprintdenver.org

Kyoto goal not reachable in Denver



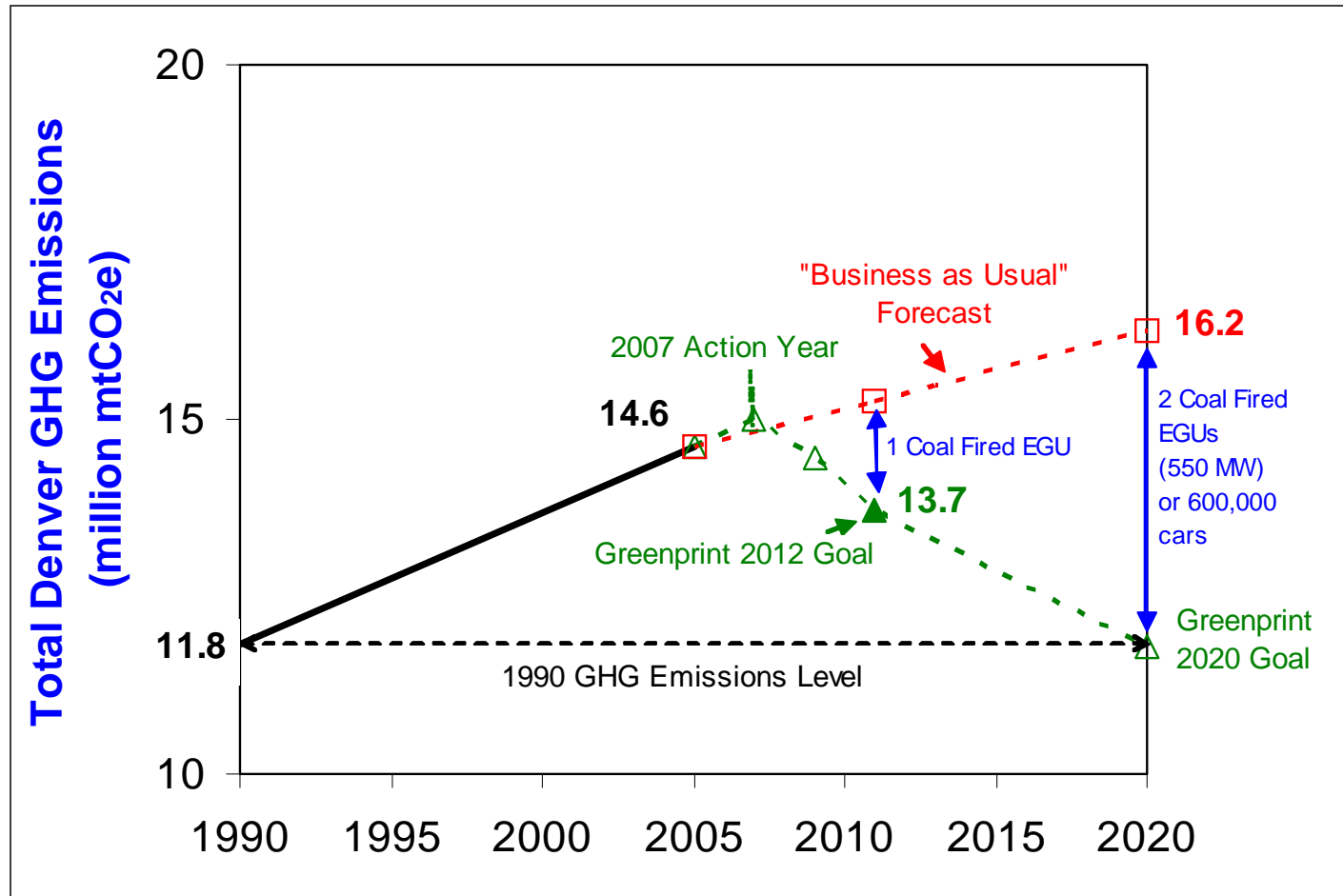


How Should We Set Goals?

- Mayor Hickenlooper committed to US Mayors Climate Protection Agreement in 2005
 - Strive to meet or exceed Kyoto goals
 - Since Kyoto not reachable in Denver, need an ambitious yet achievable goal
 - Straw goal of 10% per capita reduction proposed
- State and/or regional goals had not yet been developed for Colorado (2006-2007)
- Review state and local GHG reduction targets
 - Common theme to reduce 20% from 2005 levels or to 1990 levels by 2020



Denver GHG Reduction Goals



Denver 2012 goal = 10% per capita GHG reduction
(on the path to 1990 levels by 2020)





Review Existing Plans

- **Denver Comprehensive Plan (2000)**
 - Sustainability, land use, mobility, legacy, housing
 - Economics, neighborhoods, education, services
 - Regional Cooperation is Vital
 - Population expected to increase 1,000,000 by 2030
- **Blueprint Denver (2002)**
 - Areas of stability and change
 - Increase multi-modal streets
 - Encourage mixed-use development
- **FasTracks (2004)**
 - 1 million daily VMT reduction at full build out



Review Existing Plans (2)

- Greenprint Denver (2005)
 - Sustainable Development Action Agenda
- Strategic Transportation Plan (2008)
 - Natural Extension of Previous Master Plans
 - Multi-Modal Solutions to Transportation Challenges
 - Bold Departure from Traditional Transportation Planning
 - Tracks “person-trips” by *any* means rather than only vehicle travel
 - Still recognizes importance of maintenance and operational efficiency of existing roads
 - Takes advantage of FasTracks



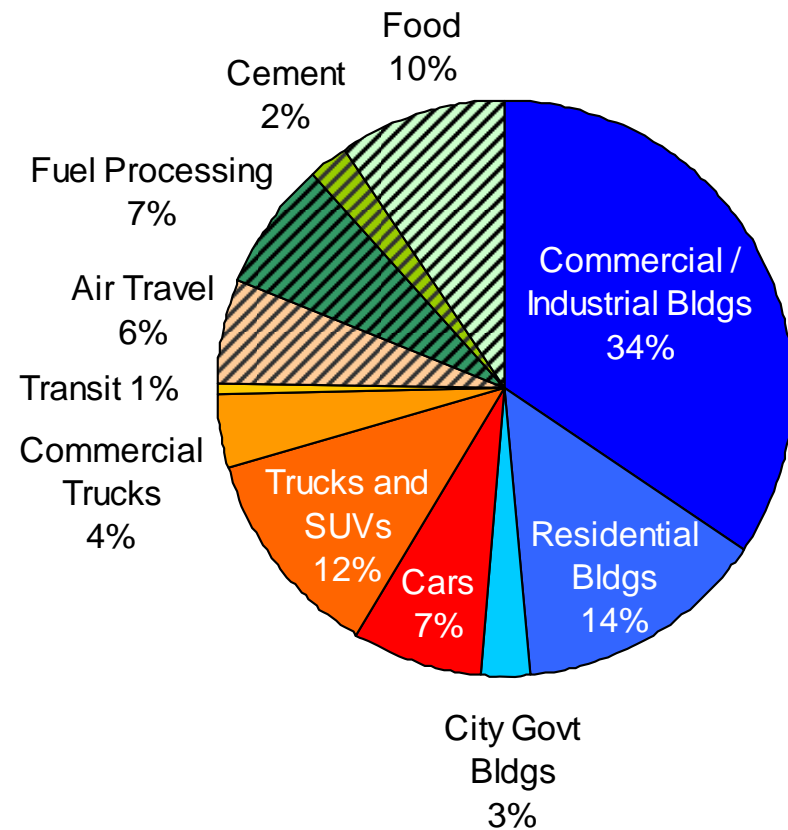
Developing GHG Reduction Strategies

- Evaluate best practices across all sectors
 - Buildings, transportation, municipal operations
 - Take advantage of “on-the-books” strategies
 - e.g. Renewable Portfolio Standard
- Quantify benefits and costs wherever possible
- Greenprint Advisory Council was formed
 - 33 City, state, and EPA managers, civic and business leaders, conservation community
 - Review and critique GHG reduction strategies
 - Present recommendations to the Mayor



Developing GHG Reduction Strategies (2)

2005 Denver GHG Footprint



- Local governments have ample control over transportation and land use planning
- Built environment energy use is the highest priority in terms of GHG emissions
- Metro areas have struggled for decades to reduce VMT growth



Developing GHG Reduction Strategies (3)

- Built Environment
 - Energy Efficiency
 - Building Codes
 - Increased Density
 - Green Concrete
- Transportation
 - Clean Cars Standard (state)
 - Pay as you drive auto insurance (state or multi-state)
 - Regional feebate system (state or multi-state)
 - Green Fleets (city operations)

<ul style="list-style-type: none"> ● No brainer; Unanimous ●● Good idea, majority support, logistics an issue ● Proceed with Caution; difficult politics or cost-benefit too high ●● Not recommended; poor cost-benefit 	Greenprint Advisory Council Rating	Weighted Score	% of Overall Goal	Field Potential	GHG Cost-effectiveness (First Cost)	Payback Period	Costs and ROI	Notes/ Assumptions	Voluntary / Mandate
EDUCATION AND OUTREACH									
Corporate Climate Challenge engages Denver's businesses to: <ul style="list-style-type: none"> leverage Xcel's Demand Side Management (DSM) program (33% rebate) to improve energy efficiency (10%) 	●●	4.4	19%	High	\$10-26	- WindSource No payback (recurring cost)	WindSource and commuter benefits; • \$80M total DSM investment; though	- 35% of Xcel's DSM program allocation of 800 GWh by 2011 - Double current WindSource (from 50 GWh to 100GWh)	Voluntary
Carbon Offsets for Travel allows offset purchases to "cancel out" travel GHG impacts <ul style="list-style-type: none"> uses kiosks at DIA & annual auto registration mailers 	●●	4.4	20%	Med	\$10	No payback (recurring cost)	• \$6/car/yr • \$2.50/1000 mile air trip	- 7% of drivers offset 10% of their emissions at a cost of \$6 per car per year Airline: - 10% of enplaned airline passengers	Voluntary
Residential WindSource & Energy Conservation Challenge uses smart meters to: <ul style="list-style-type: none"> enable residents to "see" home energy use on real-time 	●●	4.3	5%	High	\$10-12	- WindSource No payback (recurring cost) - Energy	Participant Costs: \$475K total /yr for WindSource; Participant Invests: \$150/home for Energy Conservation	- Double 2.5% of the Denver homes currently buying 47 GWh in WindSource - 10% of residents are assumed to use the meters - Smart meter policy \$9 for all homes to	Voluntary
Compact Fluorescent Lamps increases compact fluorescent lightbulb use <ul style="list-style-type: none"> saves 75% of lighting energy compared to incandescents uses outreach and incentives to create change 	●	4.1	1%	High	\$18	1-2 yrs	Participant Invests: \$800K total (60% ROI); Implementation Cost: \$1.4M for	- 50% of households would use 2-4 CFLs - First two given away by the city - 50% of those receiving free bulbs bought two more	Voluntary
Energy Audits for homeowners <ul style="list-style-type: none"> diagnoses best ways to improve home energy performance checks insulation, furnaces, boilers, etc. 	●	4	1%	High	\$46	4-5 yrs	Participant Invests: \$3.5M (20% ROI); Implementation Cost: \$800K	- 6% of homes participate in the free audit (based on national data) - Average energy saving of 10%	Voluntary
Energy Blitz outreach door-to-door <ul style="list-style-type: none"> provides education on energy conservation provides simple tools (ex: lightbulbs, weather-stripping, 	●	4	1%	High	\$20	4-5 yrs	10% of homes	- 58% of low income homes engaged in LR	
Individualized Mass Transit Marketing Pilot provides personalized information on available transit options <ul style="list-style-type: none"> increases mass transit usage 	●		1%	Med	\$41	Savings from gas conservation			
Zero Waste Events with high visibility <ul style="list-style-type: none"> demonstrates how waste can become valuable material or useful energy entry-point for other outreach activities 	N/D	3.8	Data has been requested - awaiting analysis						
Solar Roofs	N/D	3.9	<1%	Med	150 (w/o Xcel rebate)	>30 yrs (w/o rebate)			
CITY POLICIES AND CODES									
High Performing Green Concrete									

Over 50 individual strategies evaluated:

- Education/Outreach
- City Codes/Policies
- Market Based Mechanisms
- Lead by Example
- State Level Measures



Denver Climate Action Plan

- Developed to achieve goal of 10% per capita reduction in GHG emissions in 2012
- Diverse combination of strategies
- City government actions alone will barely make a dent
- Need partnerships in order to implement
 - Businesses, associations, lending institutions
 - Residents
 - Non-profits

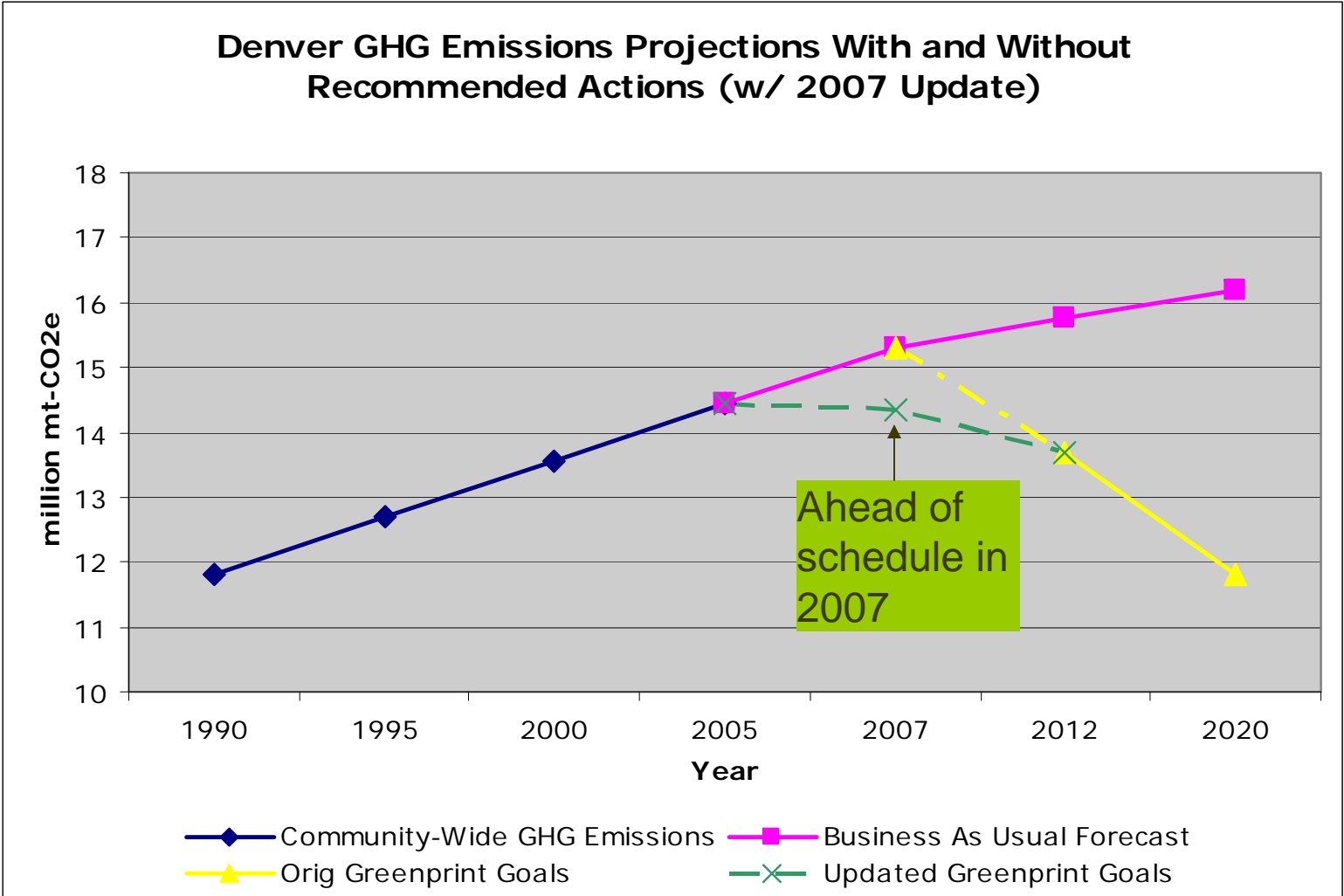
www.greenprintdenver.org





Measuring Progress

Denver GHG Emissions Projections With and Without Recommended Actions (w/ 2007 Update)





What's Missing?

- Regional Coordination
 - COGs can play a valuable role
 - Not a big departure from traditional roles
- Public health perspectives have been missing until recently
- Implementing visionary plans will require significant funding
 - Will the public support it?
 - Payback/ROI not enough to spur significant action
 - Diverse perspectives can help greatly

www.greenprintdenver.org





Summary

- Local governments have taken an aggressive leadership role in setting climate action goals
 - Federal, state, and regional targets can/do help
- Energy efficiency is the highest priority for early reductions
- Transportation GHG reduction strategies are still minor at the local level (but ozone...)
- Denver is reducing its carbon footprint through local actions
 - Policies and market demands have both played important roles to date



More Information

- Web site: www.greenprintdenver.org



- E-mail: greenprint@denvergov.org
- GHG Questions: gregg.thomas@denvergov.org