

Plan BayArea

Scenario Results

**Policy Advisory Council
December 14, 2011**

Where we are in the SCS process:

- **Adopted Performance Targets (Jan 2011)**
- **Approved Scenario Definitions (July 2011)**
- **Reviewed Project Performance Results (Nov 2011)**
- **Develop Scenario Details/Test Target Results (Dec 2011)**
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Five Scenarios

1. Initial Vision → **Transportation 2035**
2. Core Concentration → **Core Transit Capacity**
3. Focused Growth → **Core Transit Capacity**
4. Constrained Core Concen. → **Core Transit Capacity**
5. Outward Growth → **Transportation 2035**

- All scenarios focus growth as compared to past trends
- There is no business as usual scenario
- Performance target results highlight areas where policy is needed

Land Use Scenarios

1	Initial Vision Scenario – <i>As defined in Spring 2011</i>
2	Core Concentration – <i>Concentrates housing and job growth at selected Priority Development Areas (PDAs) along the core transit network.</i>
3	Focused Growth – <i>Recognizes the potential of PDAs throughout the region with an emphasis on major transit corridors.</i>
4	Constrained Core Concentration – <i>Concentrates housing and job growth at selected PDAs along the core transit network.</i>
5	Outward Growth – <i>Higher levels of growth in inland areas of the Bay Area; closer to past trends.</i>

Transportation 2035 Network

- **Starts with the 2010 transit and roadway network**
- **Keeps investment levels for maintenance, transit and roadway expansion, and bike/pedestrian at roughly same levels as in T2035**
- **Tests T2035 projects proposed to be carried over into Plan Bay Area**
- **Considers project performance assessment results**

Examples of Significant Projects Tested

Roadway

- **Regional Express Lanes Network**
- **Freeway Performance Initiative**
- **San Mateo and Santa Clara ITS**
- **Fremont-Union City East-West Connector**
- **I-680/Rt 4 Interchange Impvts. + SR-4 Widening**
- **Marin-Sonoma Narrows Stage 2**
- **Jameson Canyon Impvts. Phase 2**
- **SR-29 HOV Lanes + BRT**
- **New SR-152 Alignment**
- **I-80 Auxiliary Lanes (Airbase to I-680)**

Transit

- **AC Transit Grand Mac-Arthur BRT**
- **Irvington BART Infill Station**
- **Alameda-Oakland BRT + Transit Access Impvts.**
- **AC Transit East Bay BRT**
- **I-680 Express Bus Frequency Impvts.**
- **Caltrain 6-Train Service + Electrification (SF to Tamien)**
- **Van Ness Ave. BRT**
- **SMART (San Rafael-Larkspur)**
- **BART Extension from Berryessa to San Jose/Santa Clara**
- **Fairfield/Vacaville Capitol Corridor Station**

Core Capacity Transit Network

- **Starts with the 2010 transit and roadway network**
- **Keeps T2035 investment levels for maintenance and bike/pedestrian, but reduces roadway expansion and boosts core capacity transit service**
- **Tests most T2035 Network projects and includes a 46 percent increase in transit frequency impvts. from 2010 network (at a total 28-year operating and capital cost of \$53 billion)**
- **Not financially constrained due to cost of transit frequency impvts. exceeding available revenue**
 - Only \$15 billion of the needed \$53 billion is available (\$10 billion in operating efficiencies per TSP and \$5 billion in new revenue)
- **Considers project performance assessment results**

Examples of Significant Projects Tested (includes most T2035 Network projects)

Roadway

- SR-84/I-680 Interchange Impvts + SR-84 Widening
- Bay Bridge Contraflow Lane
- US-101 HOV Lanes (Whipple Ave to Cesar Chavez St)

Transit

- BART Metro Program
- Dumbarton Corridor Express Bus
- BART Bay Fair Connection
- BART to Livermore Phase 1
- Golden Gate Ferry Service Frequency Impvts.
- SFMTA Transit Effectiveness
- Better Market Street
- Geneva Ave BRT and Southern Intermodal Terminal
- Parkmerced Light Rail Corridor
- Oakdale Caltrain Station
- SamTrans El Camino BRT
- VTA El Camino BRT
- Service Frequency Impvts. on AC Transit, Muni, ferries, BART, and Caltrain

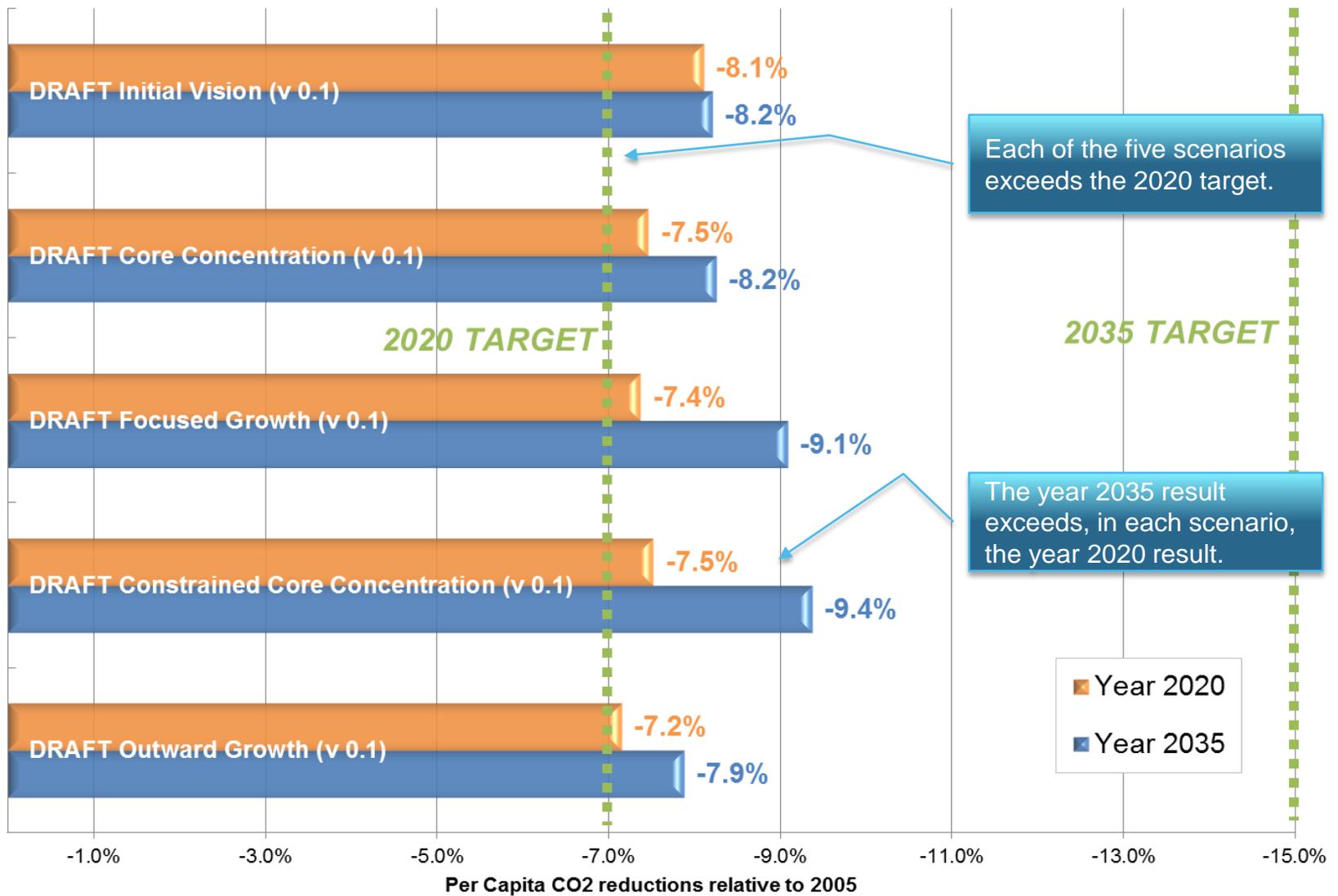
Pricing

- Congestion Pricing Pilot (NE Quadrant)
- Treasure Island Congestion Pricing

SB 375 Greenhouse Gas Emissions Targets

- The Air Resources Board established per capita reduction targets for passenger vehicle and light-duty truck emissions relative to a 2005 baseline (excludes vehicle or clean fuel regulations)
- Bay Area's target for 2020 is a **7 percent** reduction
- Bay Area's target for 2035 is a **15 percent** reduction

Year 2020 and 2035 Per Capita Greenhouse Gas Reductions



The last time we spoke ...

- Year 2035, Current Regional Plans: -10.6 percent
- Year 2035, Initial Vision Scenario: -11.6 percent

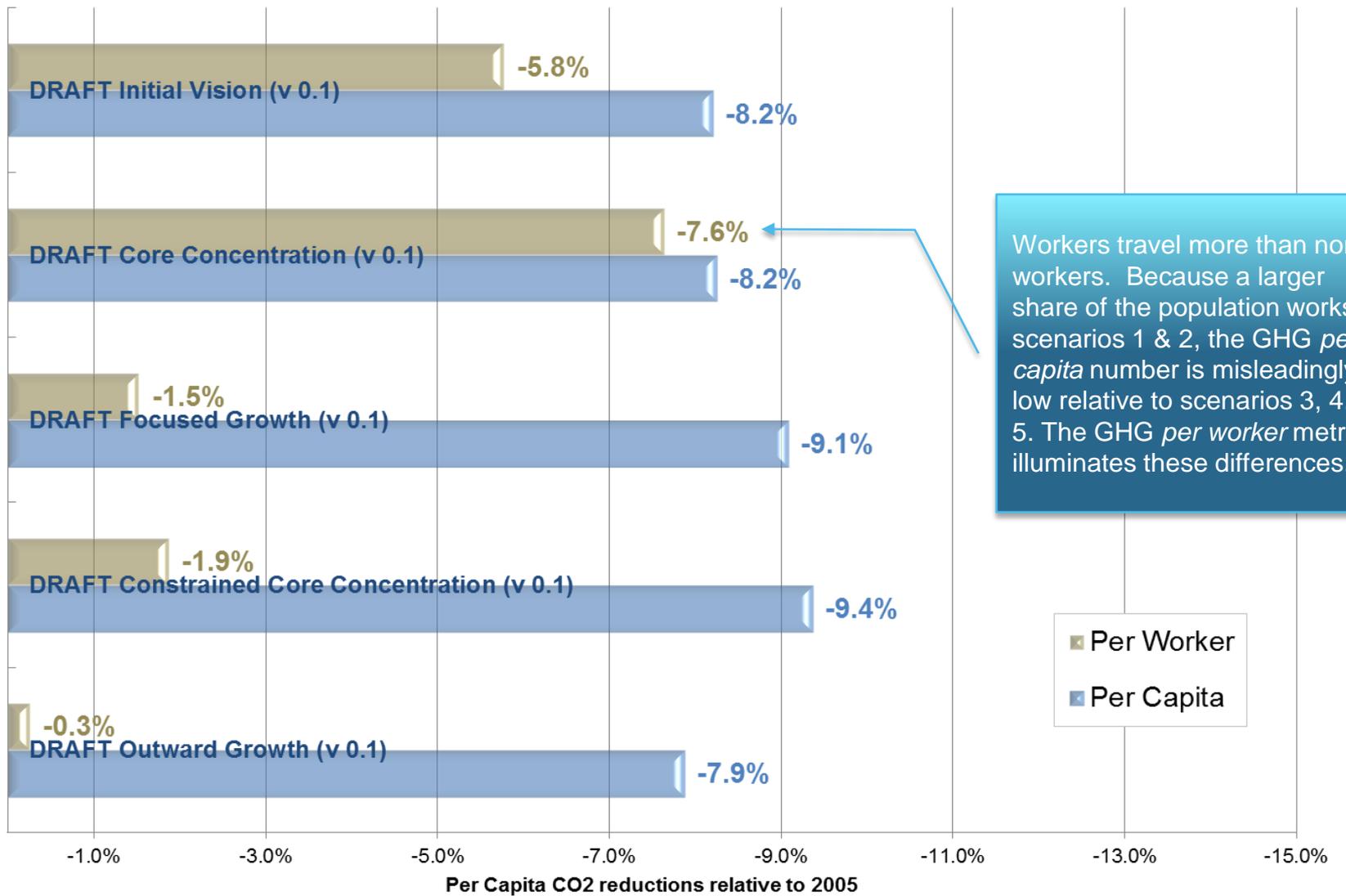
And now ...

- **Year 2035, Initial Vision Scenario: -8.2 percent**
 - Model version 0.1 instead of version 0.0 (~2 pct points)
 - Additional 100,000 employed residents (~1 pct point)
 - Transit network built from 2010 rather than 2005 (~¼ pct point)
 - No headway improvements made to transit network (~¼ pct point)
 - Minor differences in roadway and transit capital projects

Q: Why is there so little variation among GHG emission reductions?

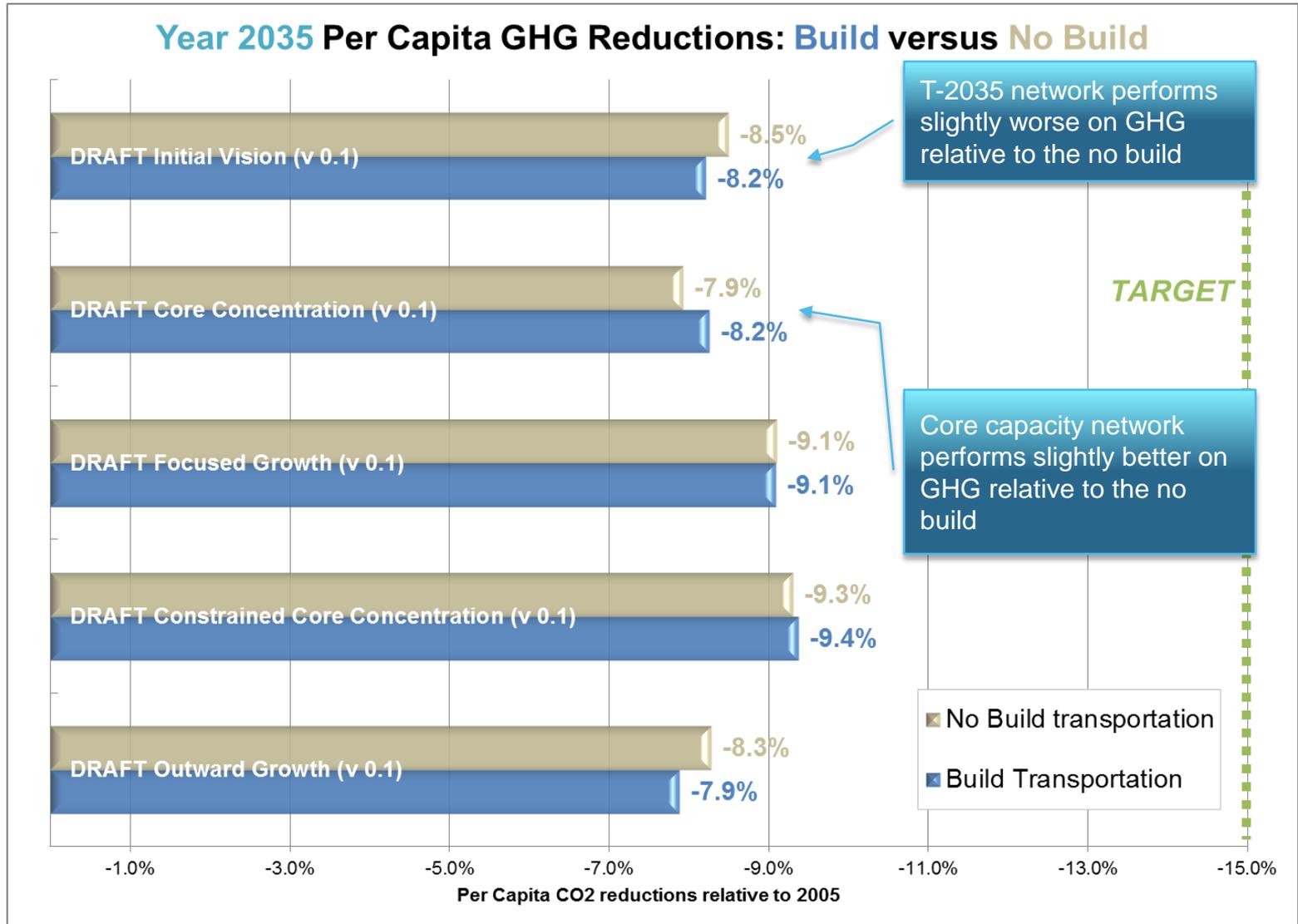
Scenario	Population	Households	Employed Residents	Jobs
Year 2010	7,150,000	2,610,000	3,150,000	3,270,000
(1) Year 2035, Initial Vision	9,430,000	3,570,000	4,310,000	4,490,000
(2) Year 2035, Core Concentration	9,180,000	3,470,000	4,270,000	4,490,000
(3) Year 2035, Focused Growth	8,980,000	3,280,000	3,860,000	4,100,000
(4) Year 2035, Constrained Core Concentration	8,980,000	3,280,000	3,860,000	4,100,000
(5) Year 2035, Outward Growth	8,980,000	3,280,000	3,860,000	4,100,000

Year 2035 Per Capita & Per Worker GHG Reductions



Workers travel more than non-workers. Because a larger share of the population works in scenarios 1 & 2, the GHG *per capita* number is misleadingly low relative to scenarios 3, 4, & 5. The GHG *per worker* metric illuminates these differences.

Q: What is the impact of transport?



1. The Bay Area has a mature transportation system that we are investing heavily to maintain.

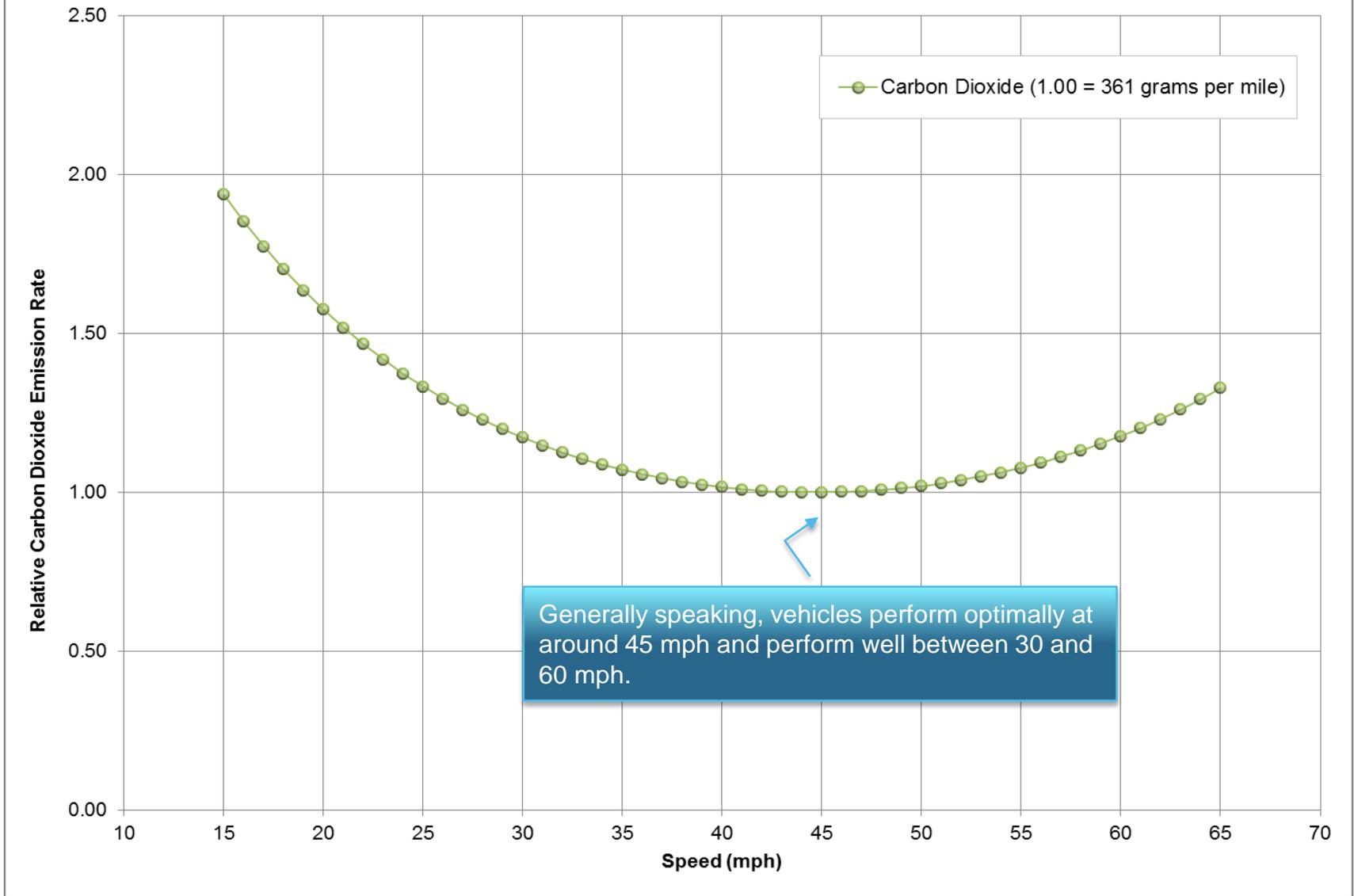
→ Do not expect to see dramatic shifts, even with large expenses on transit frequency improvements

2. Generally speaking, the greenhouse gas emissions subject to this analysis are a function of ...

- ... the amount of passenger vehicle travel; and,
- ... the speed of the traveling vehicles.

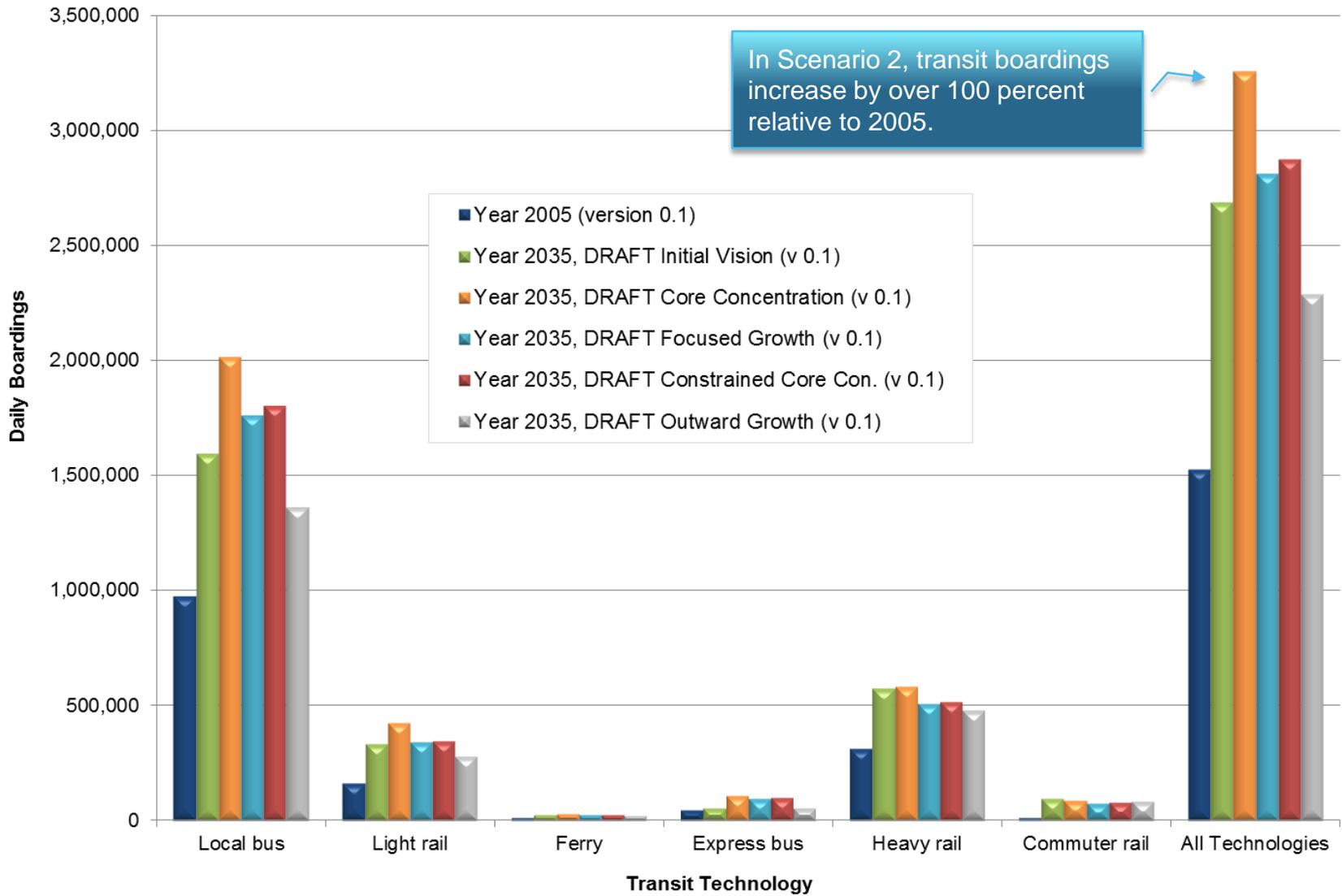
→ Roadway projects can relieve heavy congestion, which is good for GHG, but also allow vehicles to travel at faster speeds, which can be bad for GHG.

Relative Passenger Vehicle Emission Rates by Speed

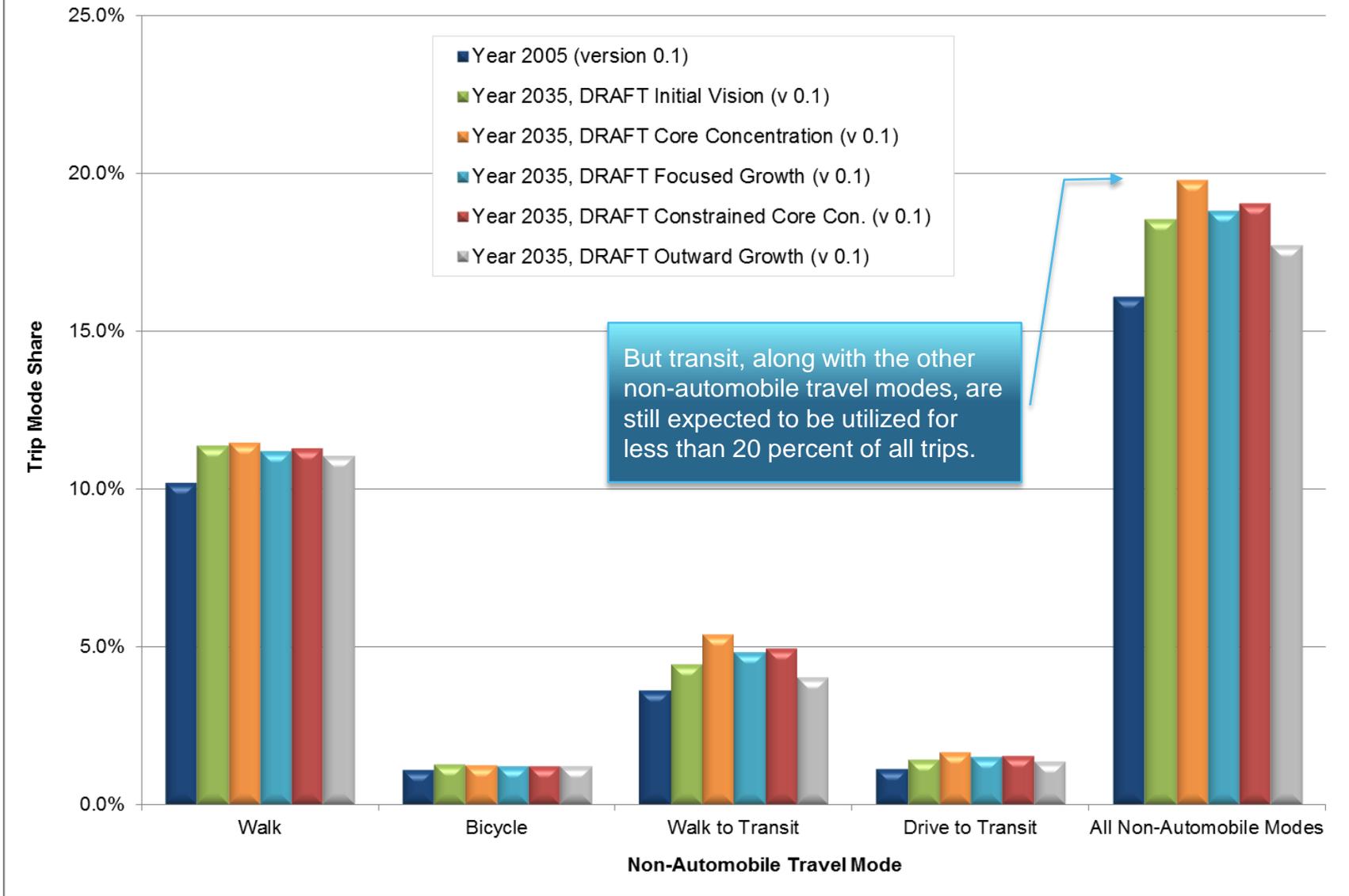


Daily Transit Boardings

In Scenario 2, transit boardings increase by over 100 percent relative to 2005.



Non-Automobile Mode Shares for all Travel



But transit, along with the other non-automobile travel modes, are still expected to be utilized for less than 20 percent of all trips.

Policy Initiatives

Initiative	Per-Capita CO ₂ Emissions Reductions (2035)
Smart Driving Campaign¹ (changing driver behavior to improve fuel economy; ~\$27 m over 5 yrs)	1.4%
Bicycle Network (build out of the regional bike network; ~\$2,200 m over 28 yrs)	0.5%
Safe Routes to Schools/ Pedestrian Network (expansion of the SR2S and a continued TLC program; \$500 m over 5 yrs)	0.3%
Vanpool Incentives (significant increase in the monetary incentive; ~\$37 m over 10 yrs)	0.9%
Electric Vehicle Strategy (consumer incentives, education, and charger installations to accelerate EV adoption; ~\$170 m over 10 yrs)	1.0%
Commuter Benefit Ordinance (mandatory pre-tax transit passes or employer operated shuttles; admin cost)	0.3%
Telecommuting (no specific policies identified at this time)	1.4%
Parking Pricing (modest pricing throughout the region with higher pricing near transit; meter & enforcement cost)	0.7%
TOTAL	6.5%

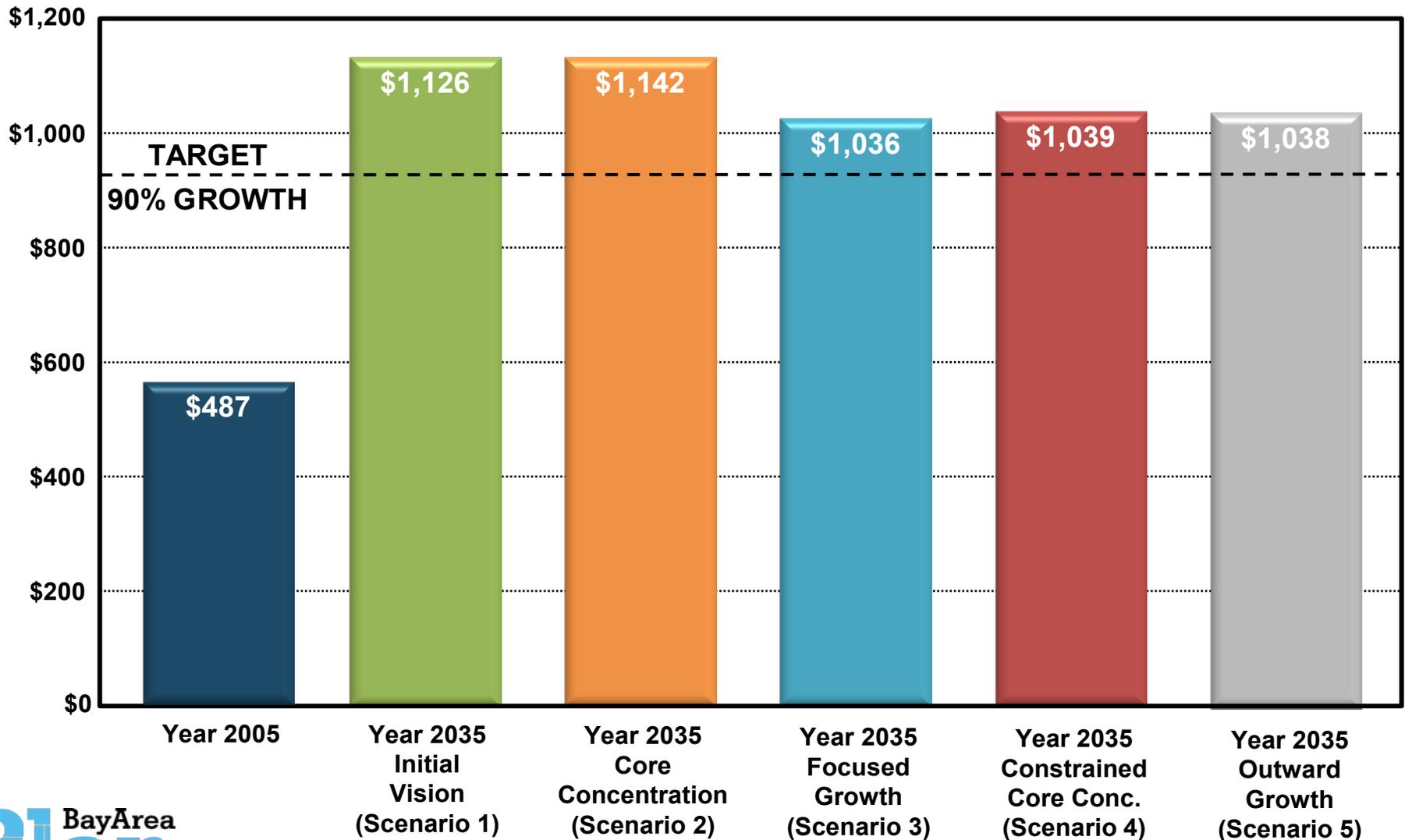
¹Source: Sivak, M., and Schoettle, B., "Eco-Driving: Strategic, Tactical, and Operational Decisions of the Driver that Improve Vehicle Fuel Economy", UMTRI-2011-34, August 2011

Target Performance: Scenarios

	TARGET	GOAL	BEST RESULT	WORST RESULT
1	Carbon Dioxide (CO ₂) per capita	-15%	-9%	-8%
2	Adequate Housing	100%	100%	98%
3a	Fine Particulate Matter (PM _{2.5}) (premature deaths due to emissions)	-10%	-32%	-23%
3b	Coarse Particulate Matter (PM ₁₀) (tons of particulate emissions; includes road dust)	-30%	-13%	-6%
3c	Particulates in CARE Communities (achieve greater reductions)	Yes		
4	Collisions (fatalities & injuries)	-50%	+18%	+26%
5	Active Transport (time spent walking/biking)	+70%	+20%	+10%

TARGET	GOAL	BEST RESULT	WORST RESULT
6 Open Space/Ag. Preservation (development within urban footprint)	100%	98%	90%
7 Low-Income H+T Affordability (for households less than \$60,000)	-10%	-4%	+9%
8 Gross Regional Product (GRP)	+90%	+134%	+113%
9a Non-Auto Mode Share	26%	20%	18%
9b VMT per capita	-10%	-7%	-5%
10a Local Road Maintenance (PCI)	+19%	+5%	+5%
10b Highway Maintenance (distressed lane-miles)	-63%	+30%	+30%
10c Transit Maintenance (assets past their useful life)	-100%	+138%	+138%

Bay Area Economic Forecast: 2035 Gross Regional Product (in billions)



Equity Analysis: Overview

MEASURE	POPULATION	BASE-YEAR	BEST RESULT	WORST RESULT
1 Housing + Transportation Affordability % of income spent	HH < \$30K	77%	+10%	+12%
	HH > \$30K	41%	+6%	+6%
2 Displacement Risk rent-burdened households at risk for displacement from future growth	COC	n/a	30%	40%
	REMAINDER	n/a	7%	10%
3 VMT Density Daily VMT on major roads	COC	n/a	2,800	3,100
	REMAINDER	n/a	1,000	1,100
4 Non-Commute Travel Time	COC	12	+3%	+6%
	REMAINDER	13	+2%	+5%
5 Commute Time	COC	25	+8%	+12%
	REMAINDER	27	+2%	+6%

Key Takeaways

- 1. Land use patterns with higher levels of focused growth in the region's core tend to perform better.**
- 2. Performance varies only slightly across scenarios because all of the scenarios represent different approaches to focused growth.**
- 3. Transportation policy is critical to building complete communities. However, the transportation scenarios have little direct impact on GHG reduction regionwide.**
- 4. We will likely need to assess further land use, transportation-related, and other policy measures to meet the GHG and other targets.**
- 5. Equity Analysis → Scenario assessment identifies areas that require further regional and local policy consideration.**

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