Scenario Results

MTC Planning Committee and ABAG Administrative Committee

December 9, 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)
- Public Workshops/Tradeoff Discussions (Jan 2012)
- Develop/Approve Preferred SCS (Feb – May 2012)
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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 –** *As defined in Spring 2011*
2	**Core Concentration –** *Concentrates housing and job growth at selected Priority Development Areas (PDAs) along the core transit network.*
3	**Focused Growth –** *Recognizes the potential of PDAs throughout the region with an emphasis on major transit corridors.*
4	**Constrained Core Concentration –** *Concentrates housing and job growth at selected PDAs along the core transit network.*
5	**Outward Growth –** *Higher levels of growth in inland areas of the Bay Area; closer to past trends.*

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**

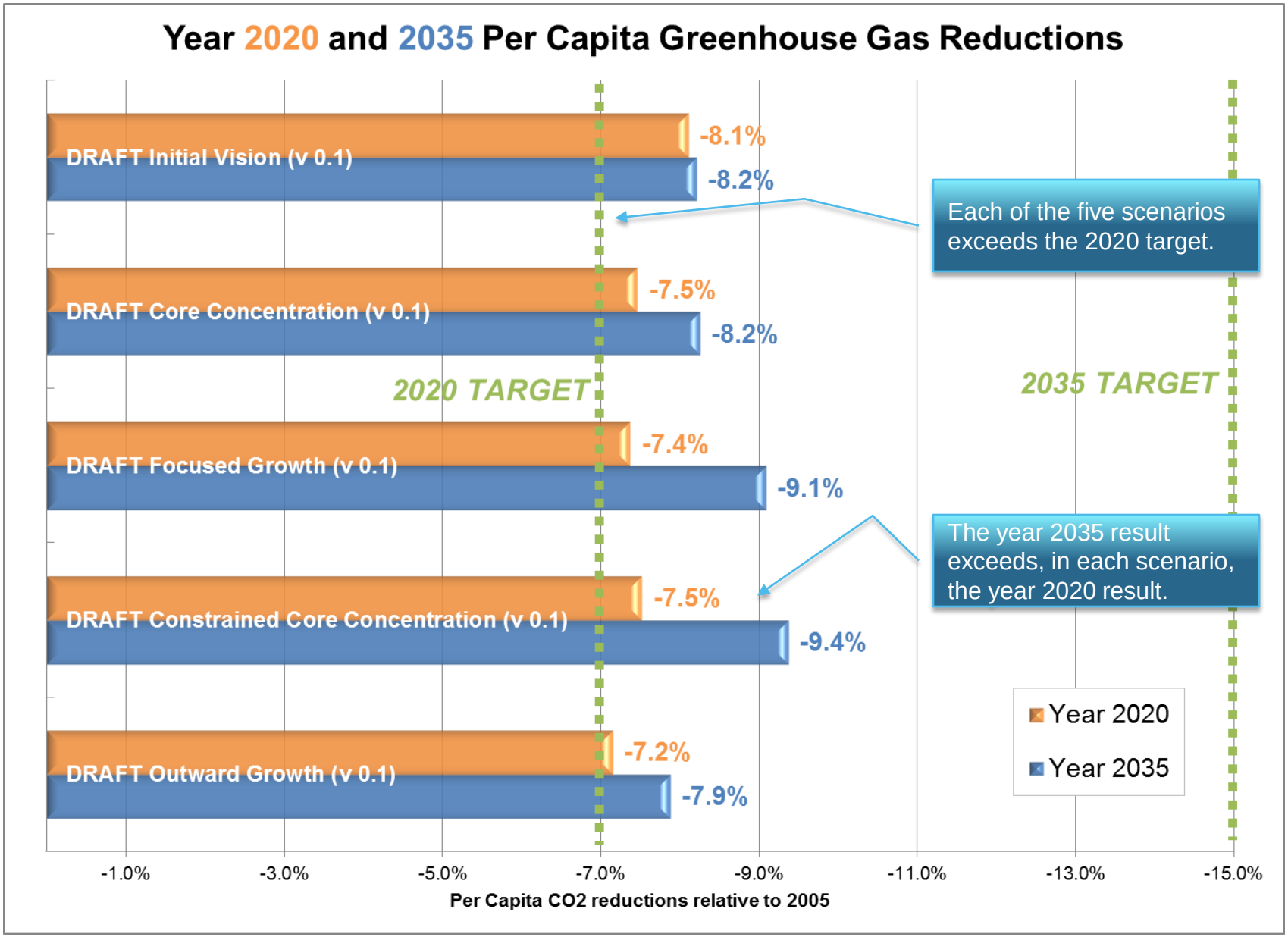
Pricing

- **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
DRAFT Initial Vision (v 0.1)
-8.1%
-8.2%
DRAFT Core Concentration (v 0.1)
-7.5%
-8.2%
2020 TARGET
2035 TARGET
DRAFT Focused Growth (v 0.1)
-7.4%
-9.1%
DRAFT Constrained Core Concentration (v 0.1)
-7.5%
-9.4%
DRAFT Outward Growth (v 0.1)
-7.2%
-7.9%
Each of the five scenarios exceeds the 2020 target.
The year 2035 result exceeds, in each scenario, the year 2020 result.
Year 2020
Year 2035
-1.0%
-3.0%
-5.0%
-7.0%
-9.0%
-11.0%
-13.0%
-15.0%
Per Capita CO2 reductions relative to 2005

The last time we spoke …

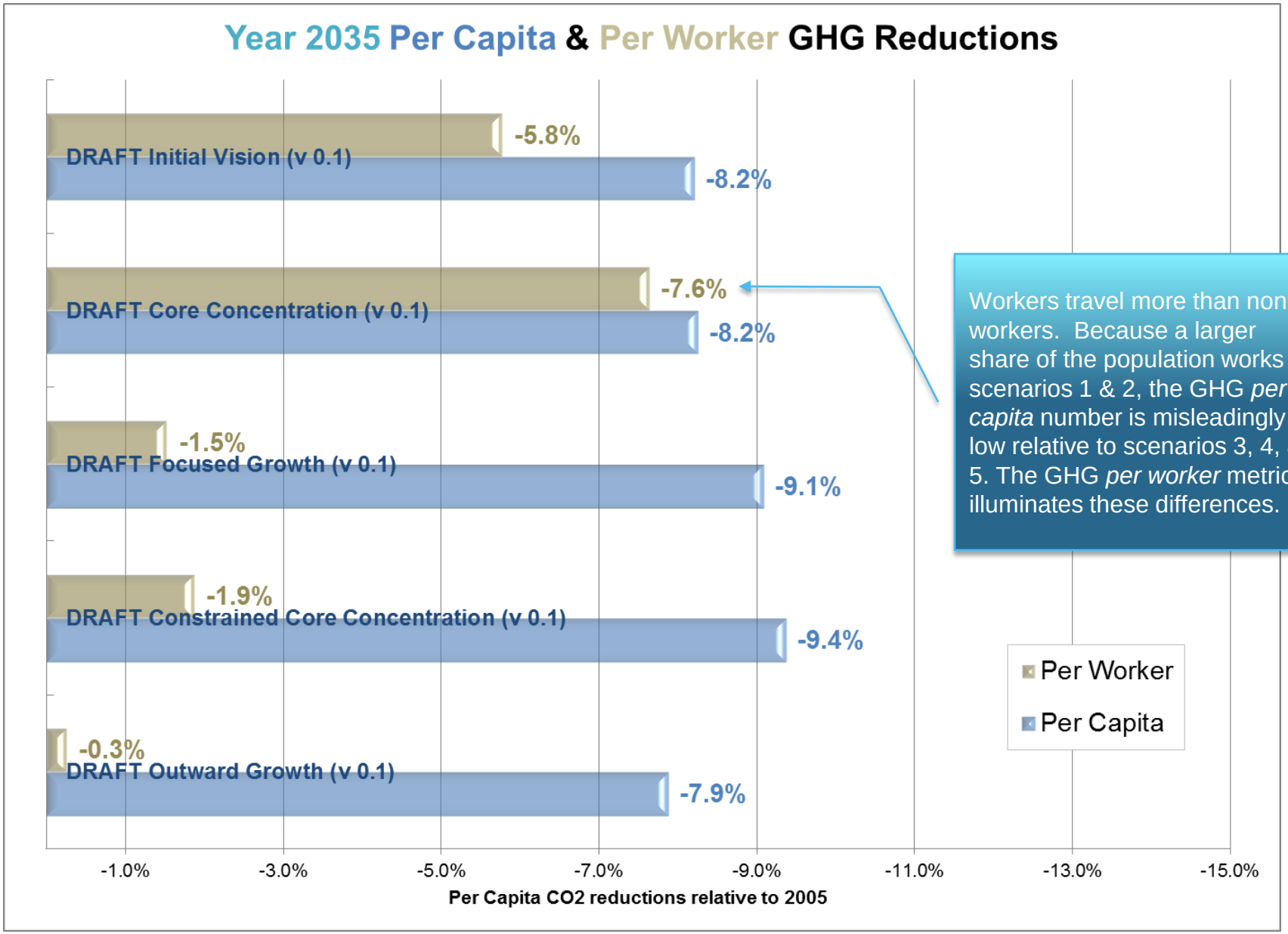
- **Year 2035, Current Regional Plans: -10.6 percent**
- **Year 2035, Initial Vision Scenario: -11.6 percent**

And now …

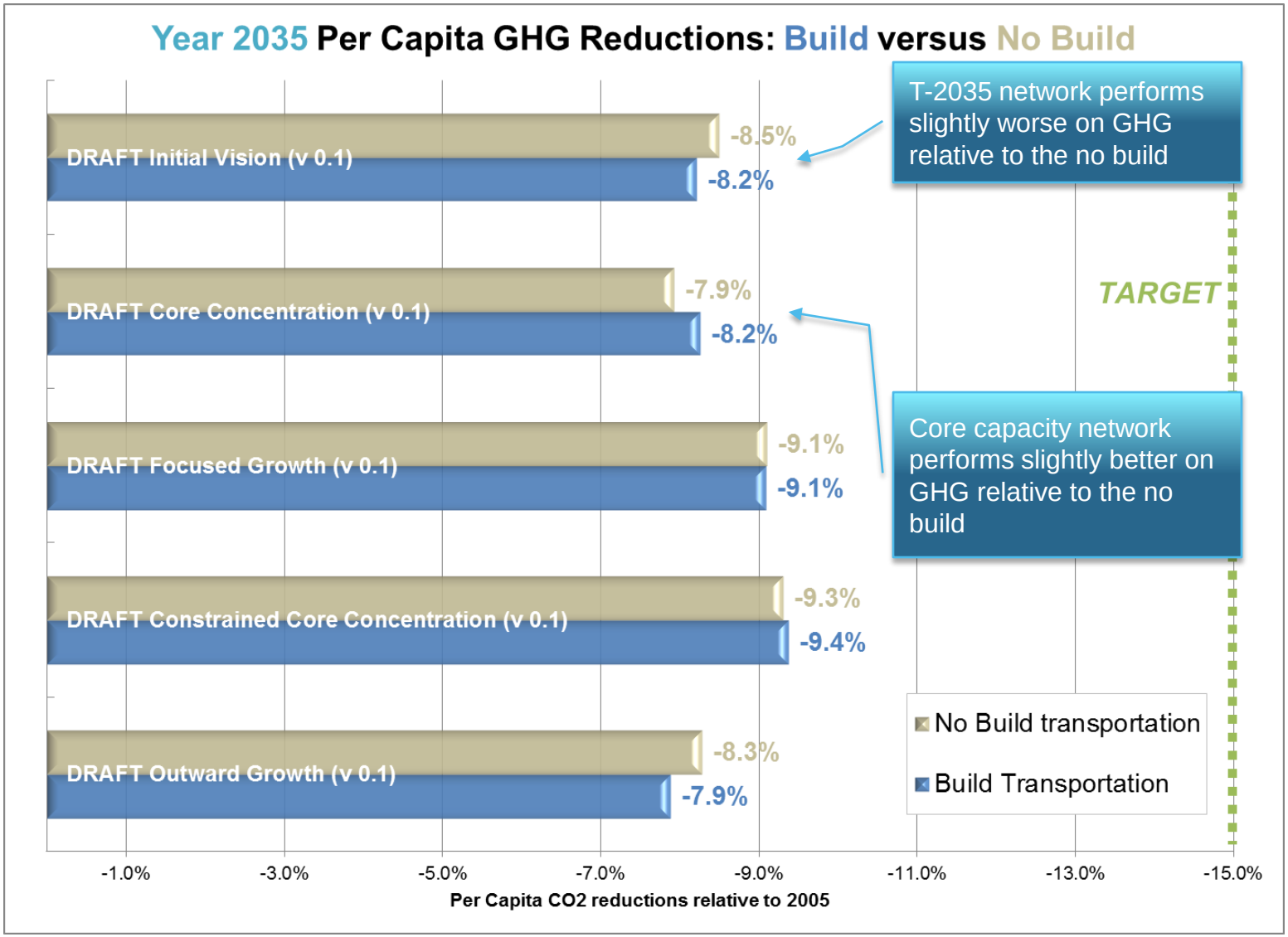
- **Year 2035, Initial Vision Scenario: -8.2 percent**
  - Model version 0.1 instead of version 0.0 (~2 pct points)
  - Additional 100,000 employed residents (~1 pct point)
  - Transit network built from 2010 rather than 2005 (~¼ pct point)
  - No headway improvements made to transit network (~¼ pct 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
DRAFT Initial Vision (v 0.1)
-5.8%
-8.2%
DRAFT Core Concentration (v 0.1)
-7.6%
-8.2%
DRAFT Focused Growth (v 0.1)
-1.5%
-9.1%
DRAFT Constrained Core Concentration (v 0.1)
-1.9%
-9.4%
DRAFT Outward Growth (v 0.1)
-0.3%
-7.9%
-1.0%
-3.0%
-5.0%
-7.0%
-9.0%
-11.0%
-13.0%
-15.0%
Per Capita CO2 reductions relative to 2005
Per Worker
Per Capita
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?

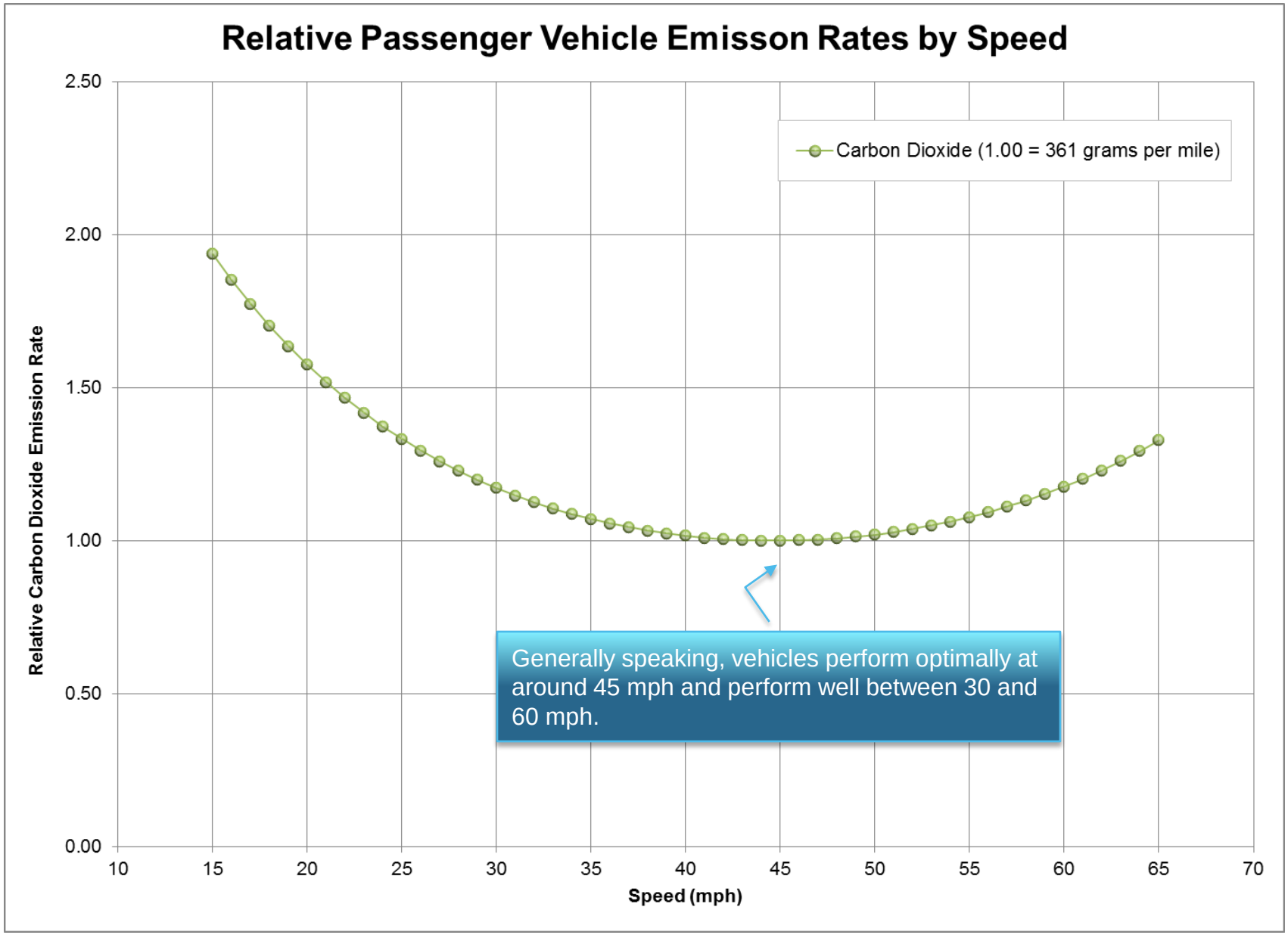


1. **The Bay Area has a mature transportation system that we are investing heavily to maintain.**

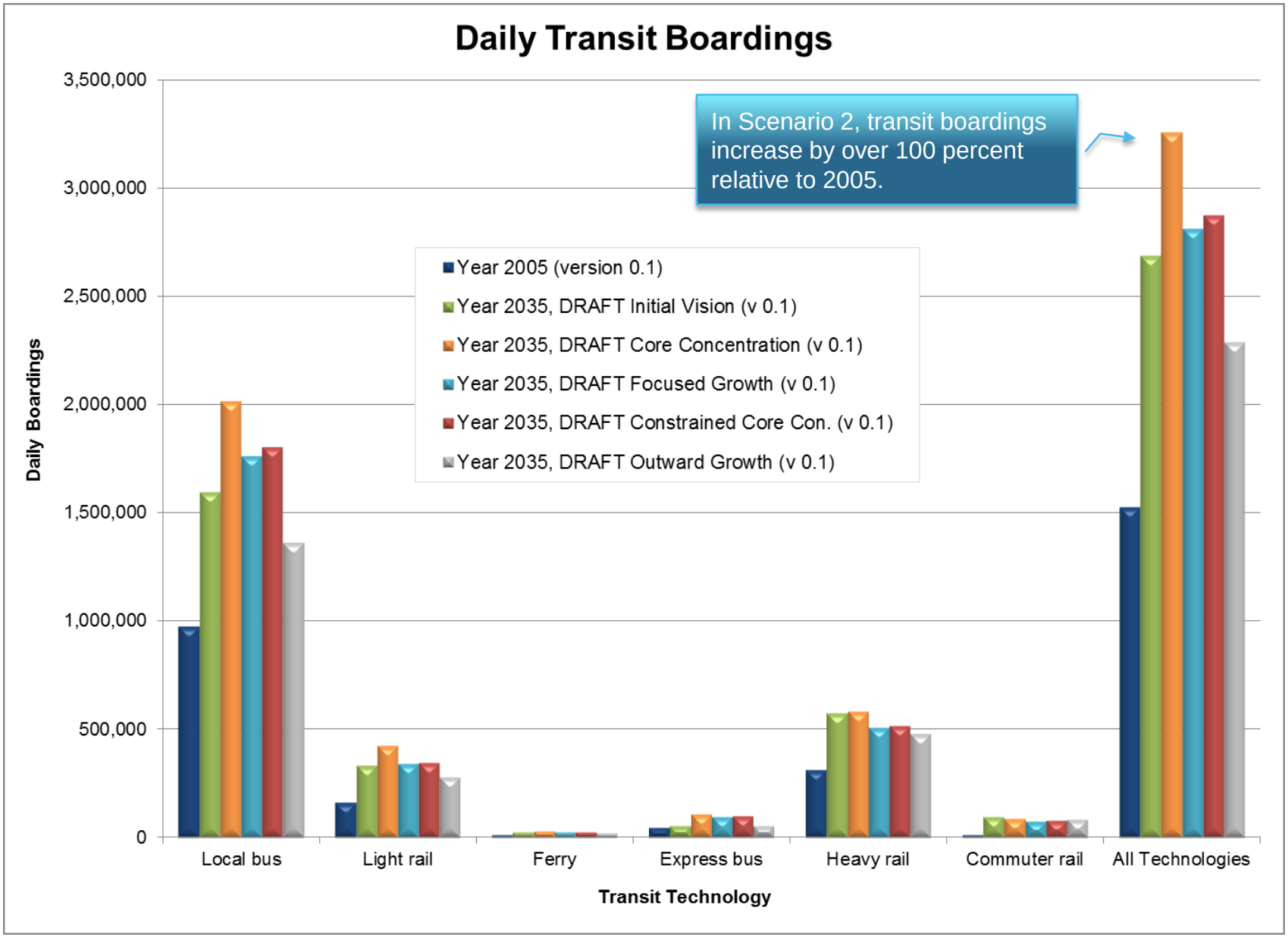
→ ***Do not expect to see dramatic shifts, even with large expenses on transit frequency improvements***

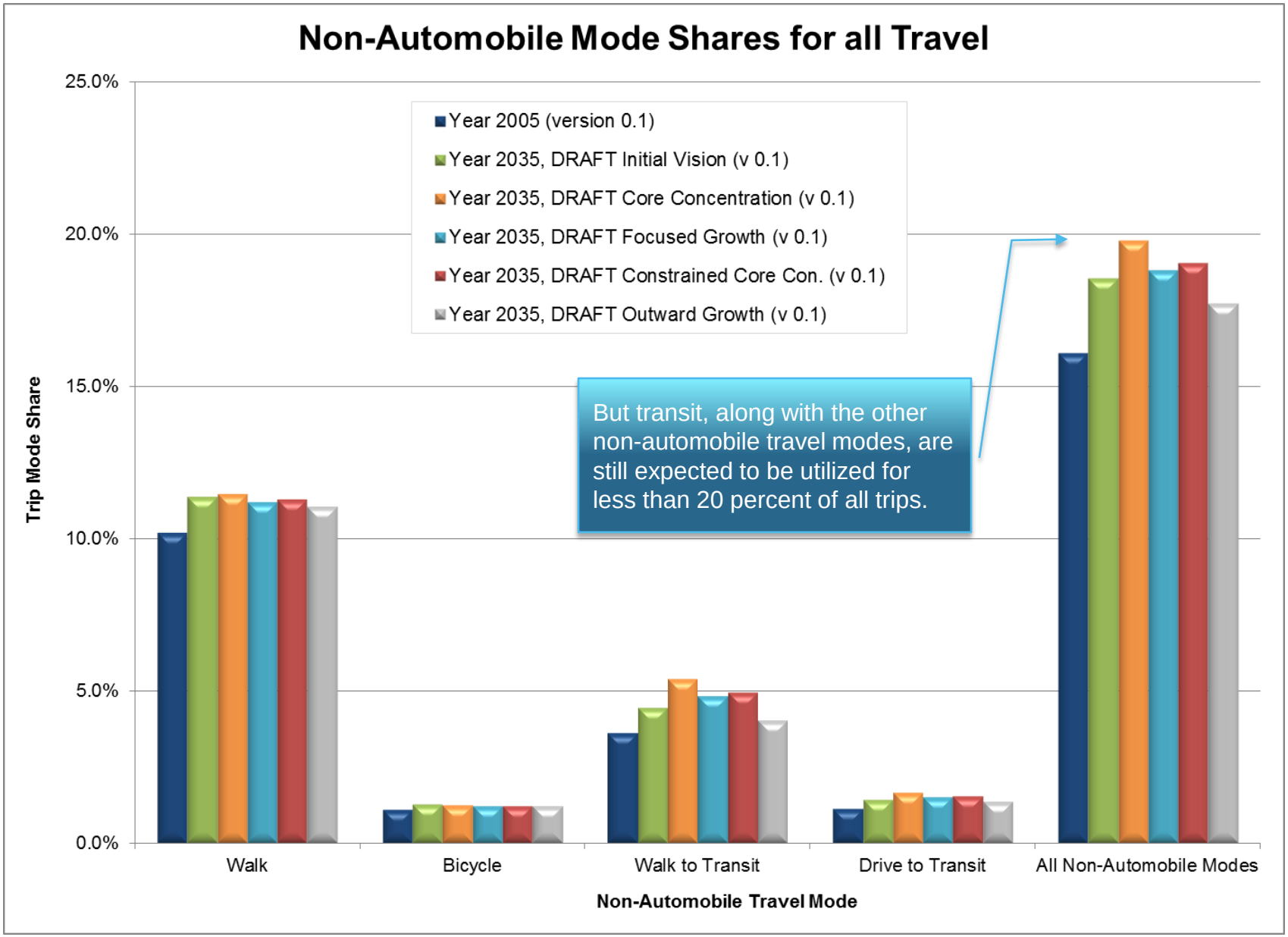
2. **Generally speaking, the greenhouse gas emissions subject to this analysis are a function of …**
   - … the amount of passenger vehicle travel; and,
   - … the speed of the traveling vehicles.

→ ***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.***



BayArea Plan


Daily Transit Boardings
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Daily Boardings
In Scenario 2, transit boardings increase by over 100 percent relative to 2005.
Year 2005 (version 0.1)
Year 2035, DRAFT Initial Vision (v 0.1)
Year 2035, DRAFT Core Concentration (v 0.1)
Year 2035, DRAFT Focused Growth (v 0.1)
Year 2035, DRAFT Constrained Core Con. (v 0.1)
Year 2035, DRAFT Outward Growth (v 0.1)
Local bus
Light rail
Ferry
Express bus
Heavy rail
Commuter rail
All Technologies
Transit Technology


Non-Automobile Mode Shares for all Travel
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
Trip Mode Share
Year 2005 (version 0.1)
Year 2035, DRAFT Initial Vision (v 0.1)
Year 2035, DRAFT Core Concentration (v 0.1)
Year 2035, DRAFT Focused Growth (v 0.1)
Year 2035, DRAFT Constrained Core Con. (v 0.1)
Year 2035, DRAFT Outward Growth (v 0.1)
But transit, along with the other non-automobile travel modes, are still expected to be utilized for less than 20 percent of all trips.
Walk
Bicycle
Walk to Transit
Drive to Transit
All Non-Automobile Modes
Non-Automobile Travel Mode

Policy Initiatives

Initiative	Per-Capita CO_2 Emissions Reductions (2035)
Smart Driving Campaign[1] (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%**

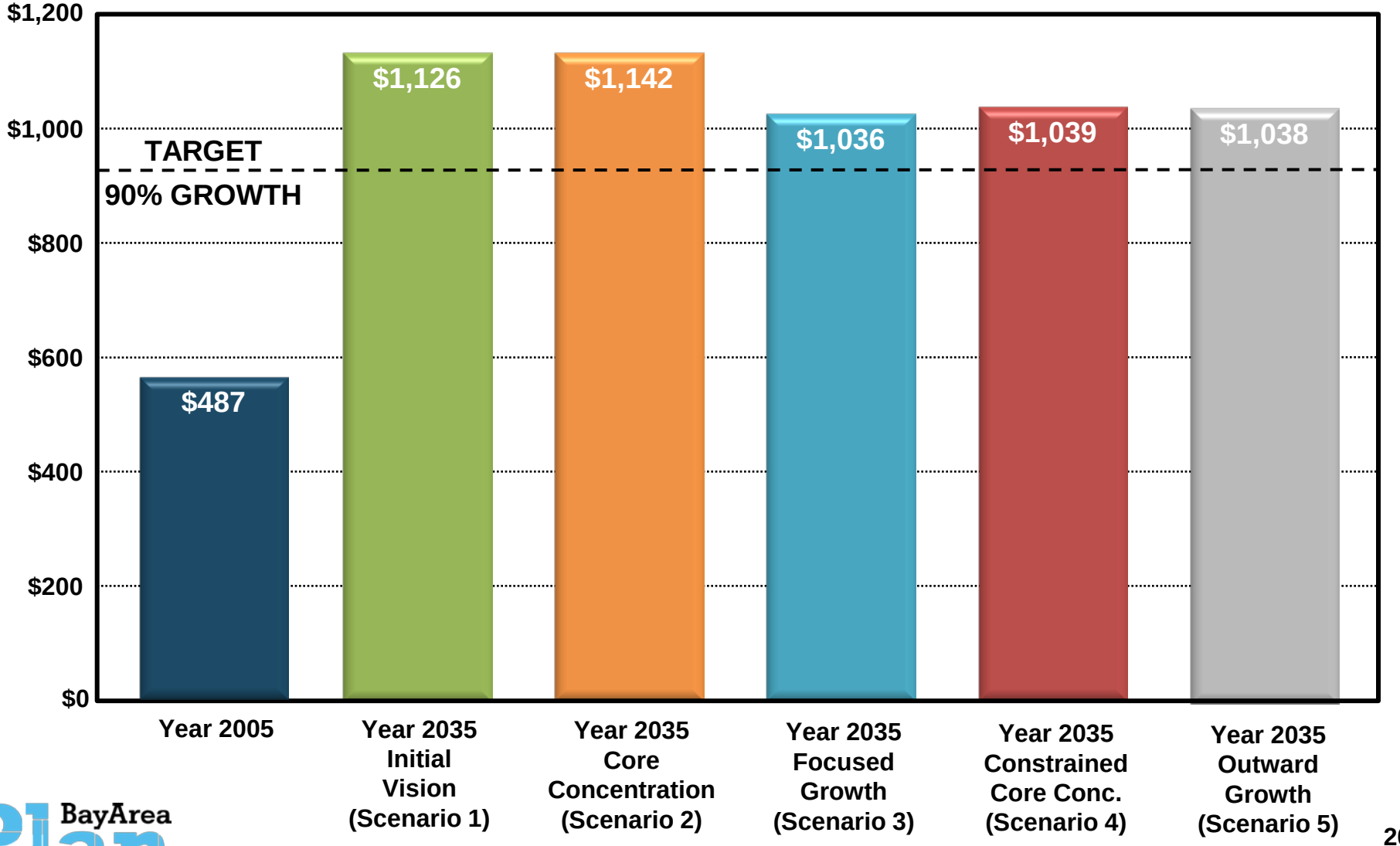
[1]Source: Sivak, M., and Schoettle, B., "Eco-Driving: Strategic, Tactical, and Operational Decisions of the Driver that Improve Vehicle Fuel Economy", UMTRI-2011-34, August 2011

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)



BayArea Plan

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.

Next Steps

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